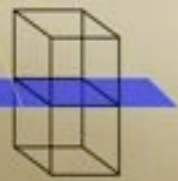
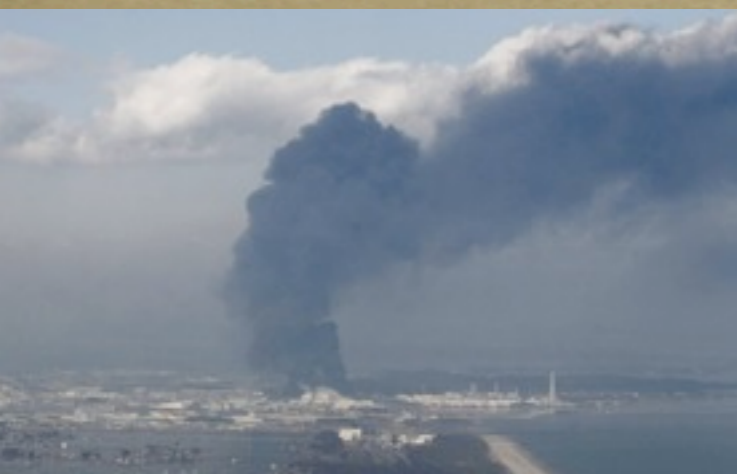
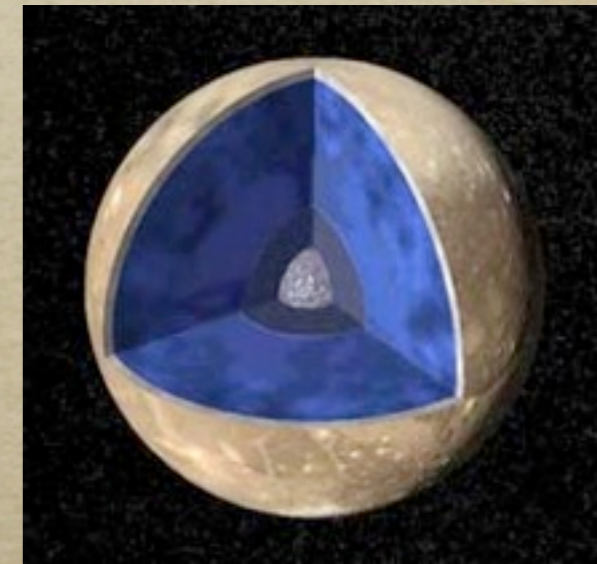
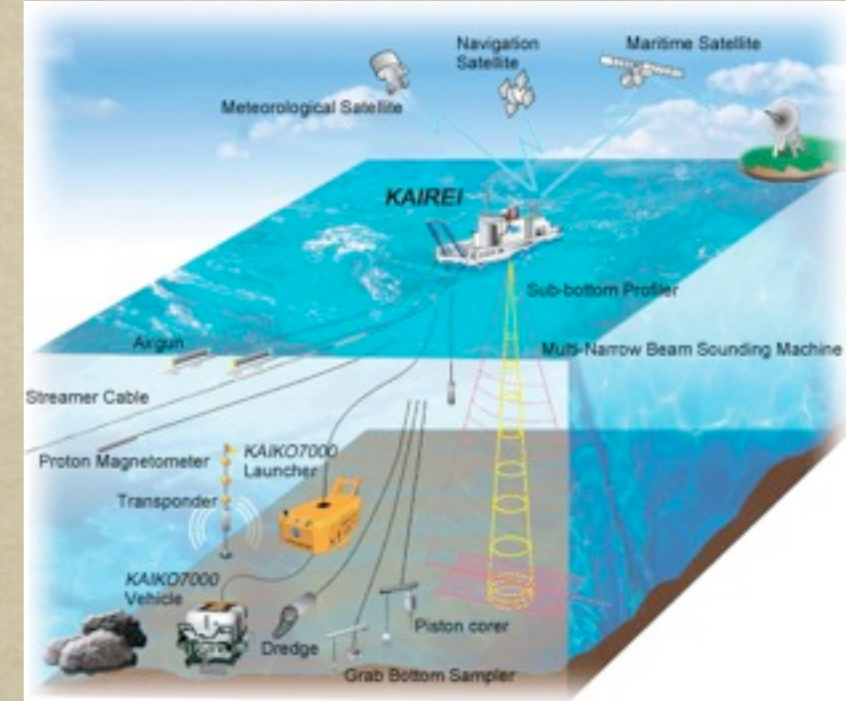
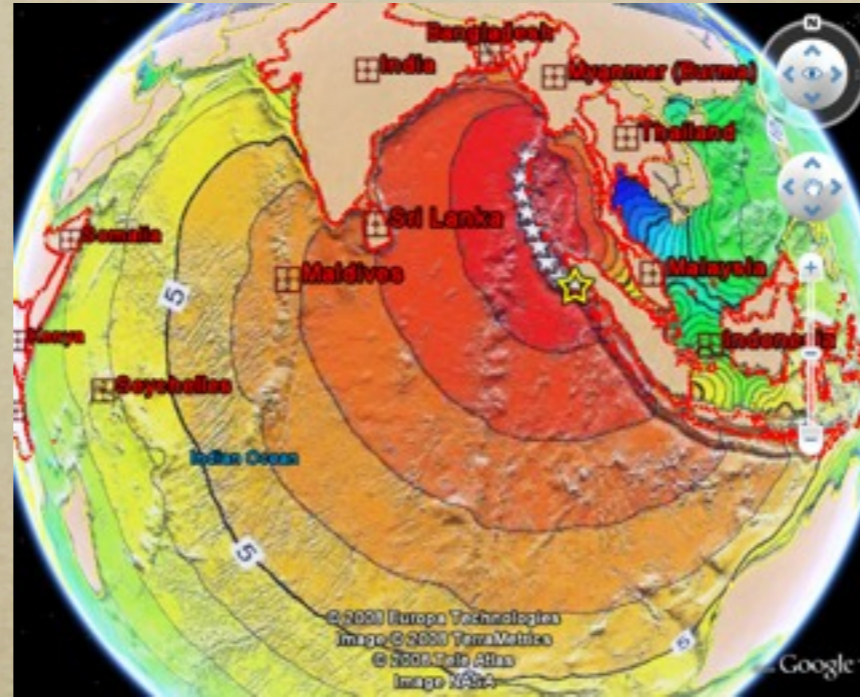
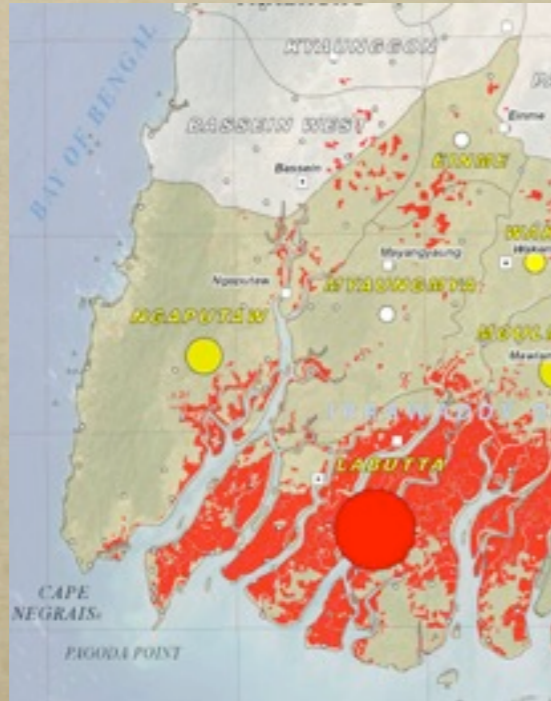


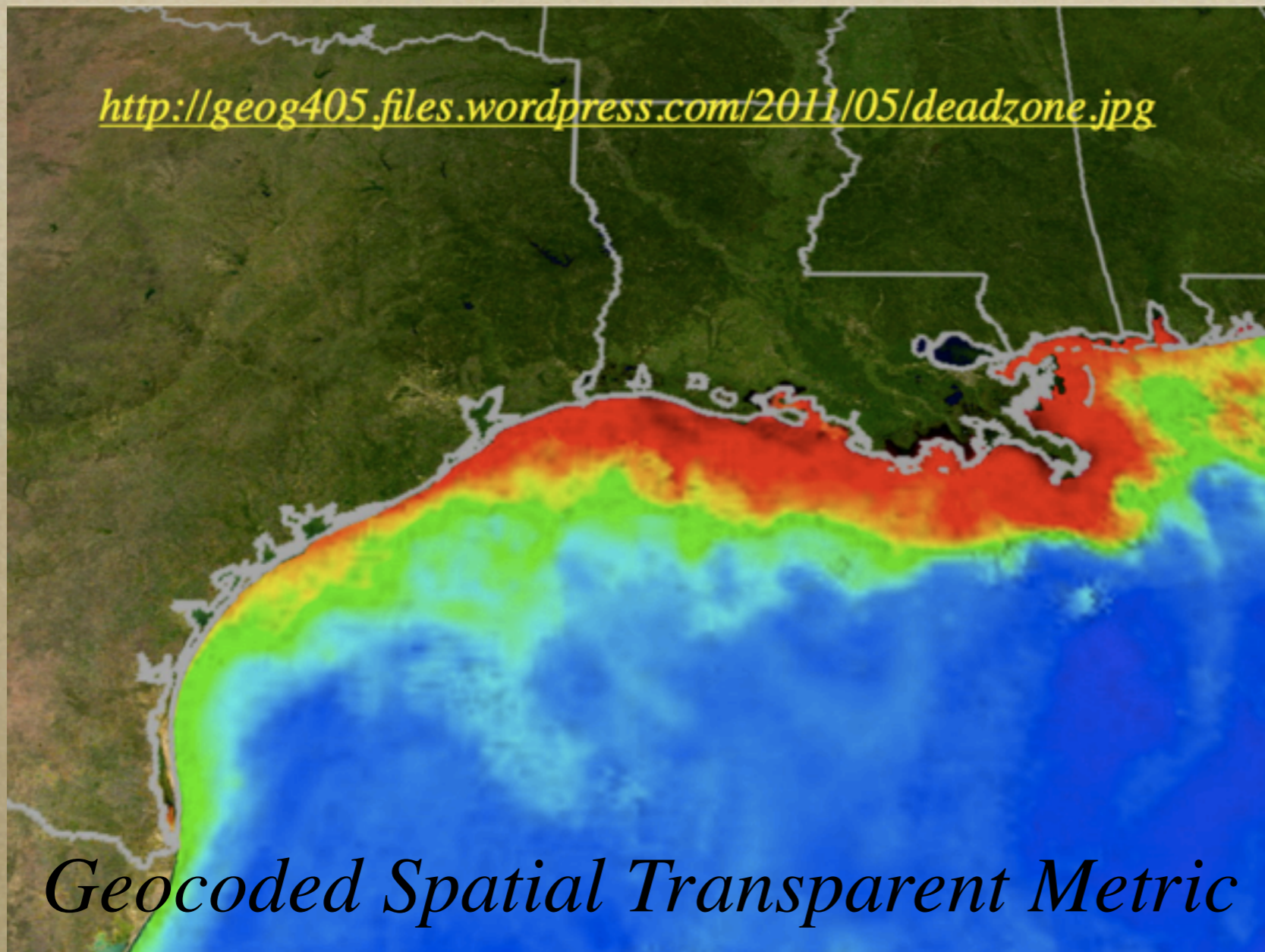
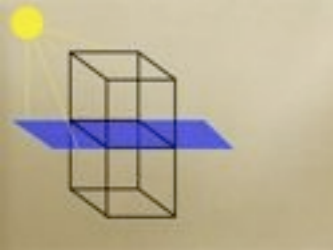
# $1m^3:10km^3 \times 2$ Geocoded Spatial Transparent Metric



Earth  
You  
GSTM  
Context

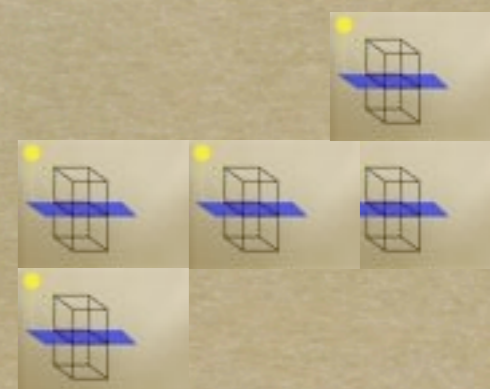






*Geocoded Spatial Transparent Metric*

*Map the local above and below sea level using  
the  $10\text{km}^3 \times 2$  scale*



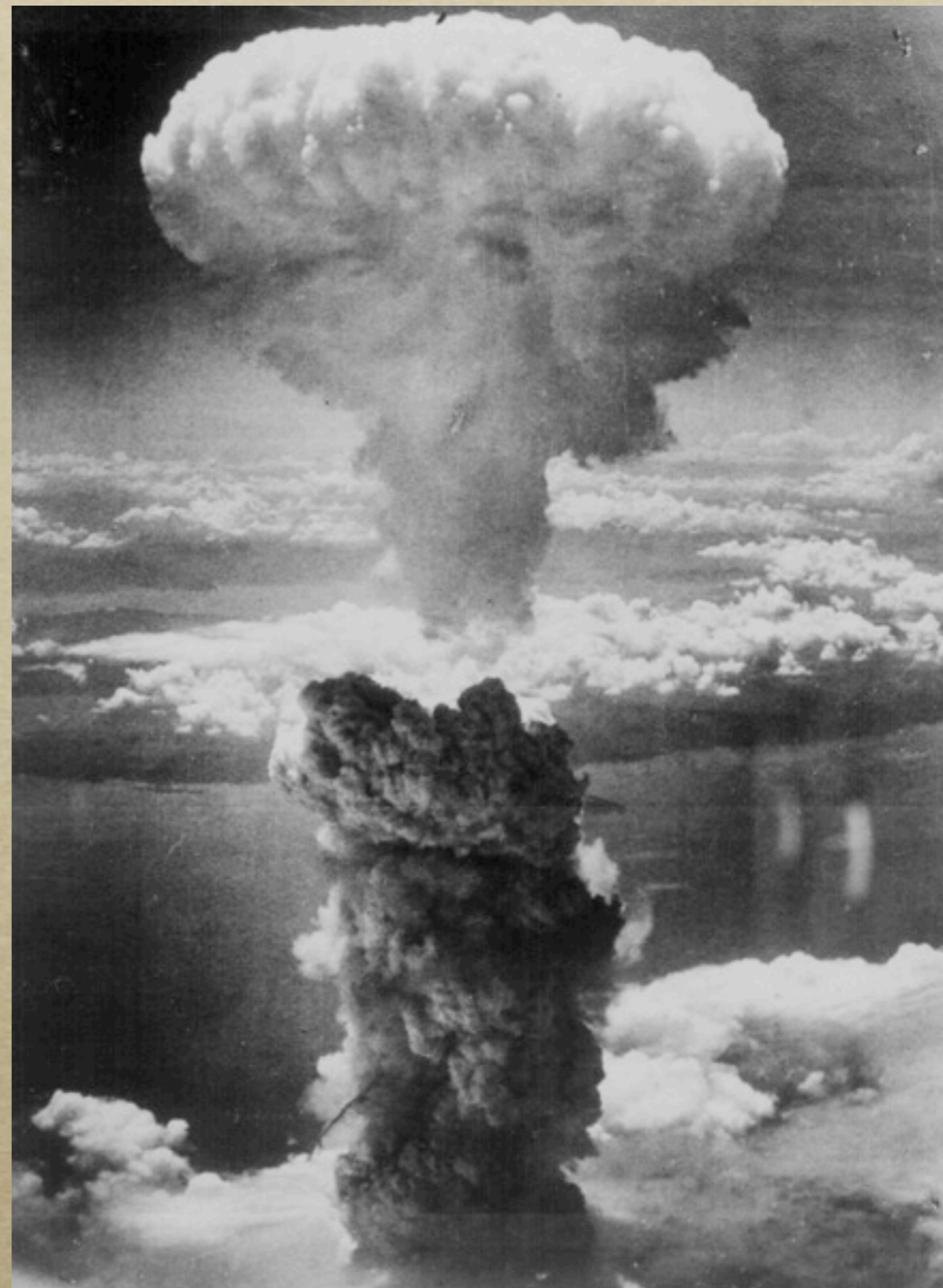


# Seeing Spatially

*Game Changers:*

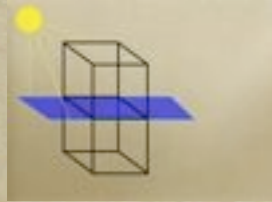


*Learning to Think Spatially*





*The Geocoded Spatial Transparent Metric might help us remember our own history and see dark metadata where we live. We need pragmatic as well as innovative and novel thinking.*



*“Reseeing” the local GSTM:  
Ten kilometers cube stacked.*

*The Geocoded Spatial Transparent Metric*

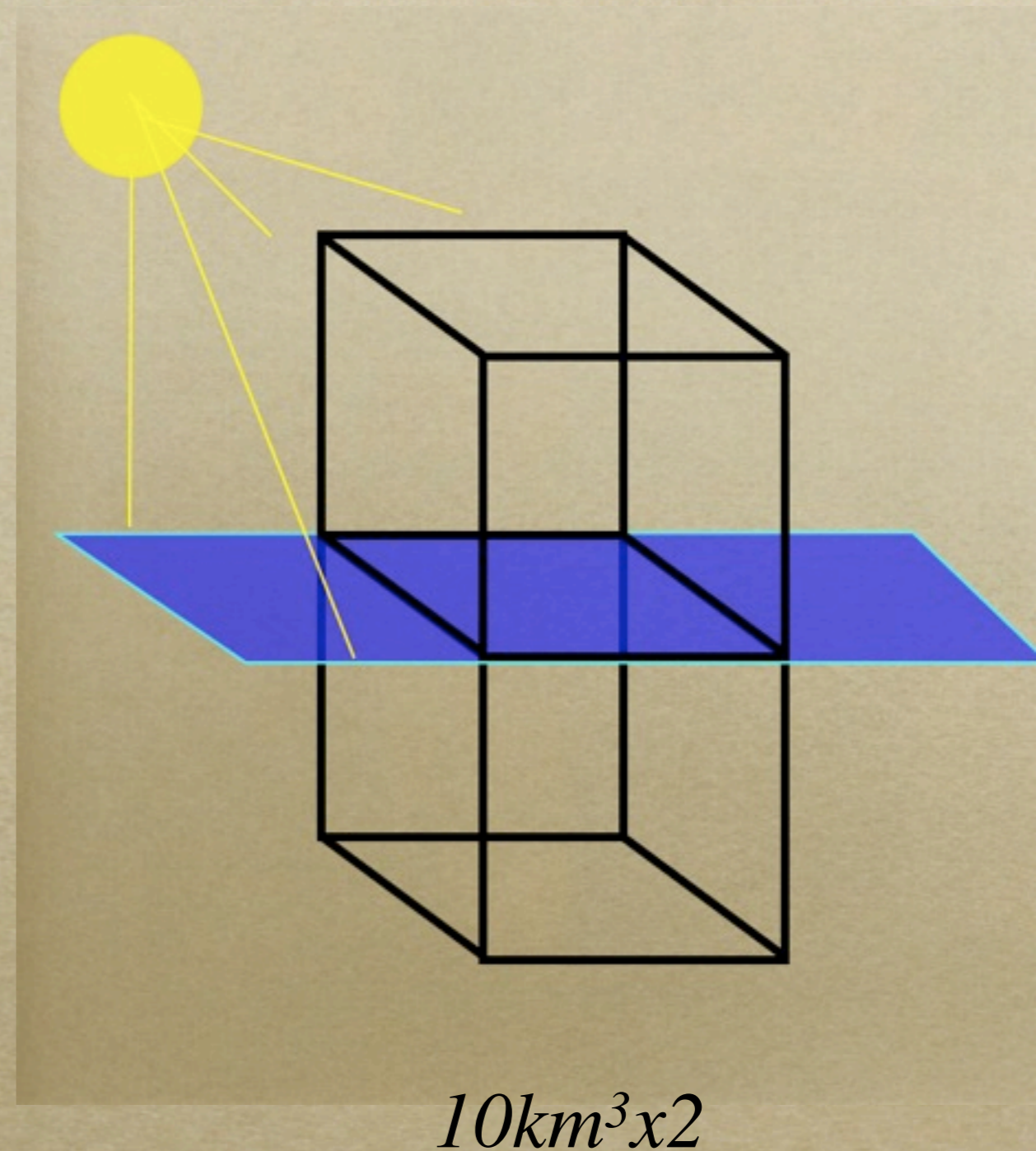
## Dark Metadata

*Google, ESRI,  
the United Nations Conventions and Treaties ,  
Global Science Academies, everyone:*

*we need new behavior and  
thus new thinking, new memories and  
thus new tools to map our future.*

*We need to navigate the future by mapping  
beyond denial. We need to trust but  
verify treaties using the new global metric:  
The Geocoded Spatial Transparent Metric.*

*Science and Technology and  
GSTM mapping beginning in Kindergarten  
will help us keep our eye on the future, their future.*



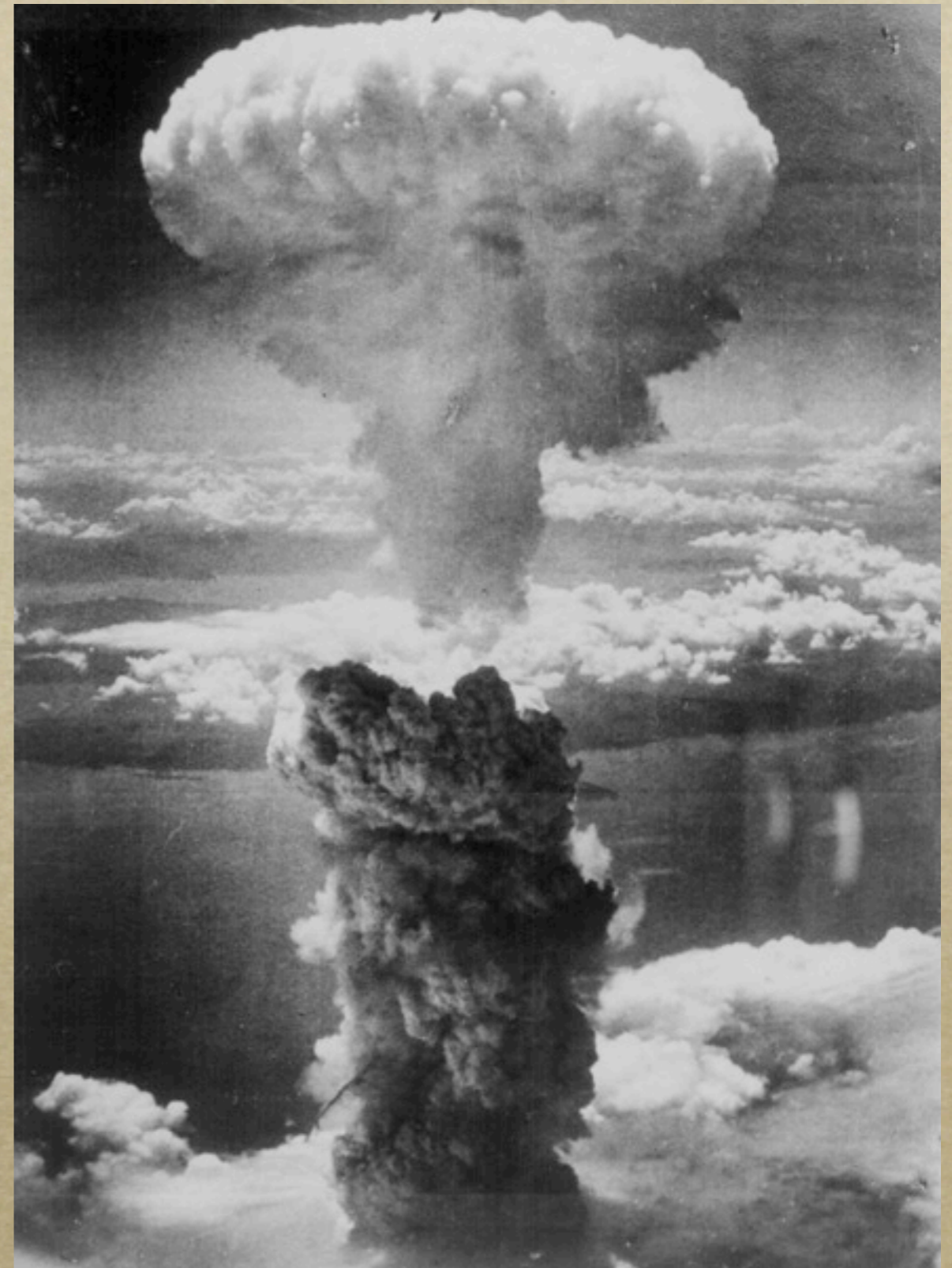


# Seeing Spatially

*Game Changers:*



*Learning to Think Spatially*





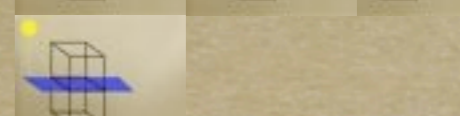
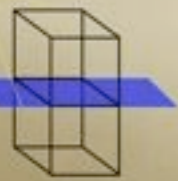
An effective U.N. verification agency would offer a number of advantages:

- 1 **Speed in treaty implementation.** If international expertise is available before a treaty is signed, a verification system can be in place when most needed-when the treaty is first implemented. A frequently cited example is the International Atomic Energy Agency's safeguards system, which was in place before the 1968 Non-Proliferation Treaty was signed; the safeguards system was quickly extended to cover the treaty. Similarly, an existing agency could not only hasten treaty implementation, but agency experts might also be able to assist negotiators in drafting specific provisions.
- 2 **Cost.** An agency that verifies a number of treaties can save costs by sharing many scientific, technical, and administrative resources. Since satellite data would be used to verify a number of treaties, the agency could employ a single team of expert image- and photo-interpreters. [3] Since verification costs would be spread over a longer time period, an existing agency might also flatten the "funding bubble" that treaties can create-the extraordinary costs incurred at the beginning of disarmament, when weapons are destroyed and verification begins. Much of the cost of personnel and institutional machinery involved in negotiating and maintaining a new agency for each treaty would also be eliminated.
- 3 **Protection of intelligence gathering.** A nation that obtains evidence of a treaty violation or suspicious activity may not wish to reveal its intelligence sources, although it may want the matter investigated by an objective body. If a U.N. agency investigated possible acts of noncompliance on request, the requesting state would not have to reveal the details of its sources or its "national technical means," such as secret satellite monitoring methods.
- 4 **Confidence.** The many peace-keeping and peace-making functions entrusted to the United Nations demonstrate that the nations of the world have confidence in the impartiality and objectivity of the secretary-general and the U.N. Secretariat. A verification agency would allow nations with little experience or expertise to exercise their right to know if other parties to a treaty are in compliance. By involving the United Nations in verification, a civilian role would be assured. from A. Walter Dorn on Arms Control/Bulletin of Atomic Scientists/1990

*A verification agency using the Geocoded Spatial Transparent Metric -GSTM- under U.N. auspices can be flexible and will make treaties and conventions and their implementation quicker, cheaper and effective for Earth's human species and biodiversity survival.*

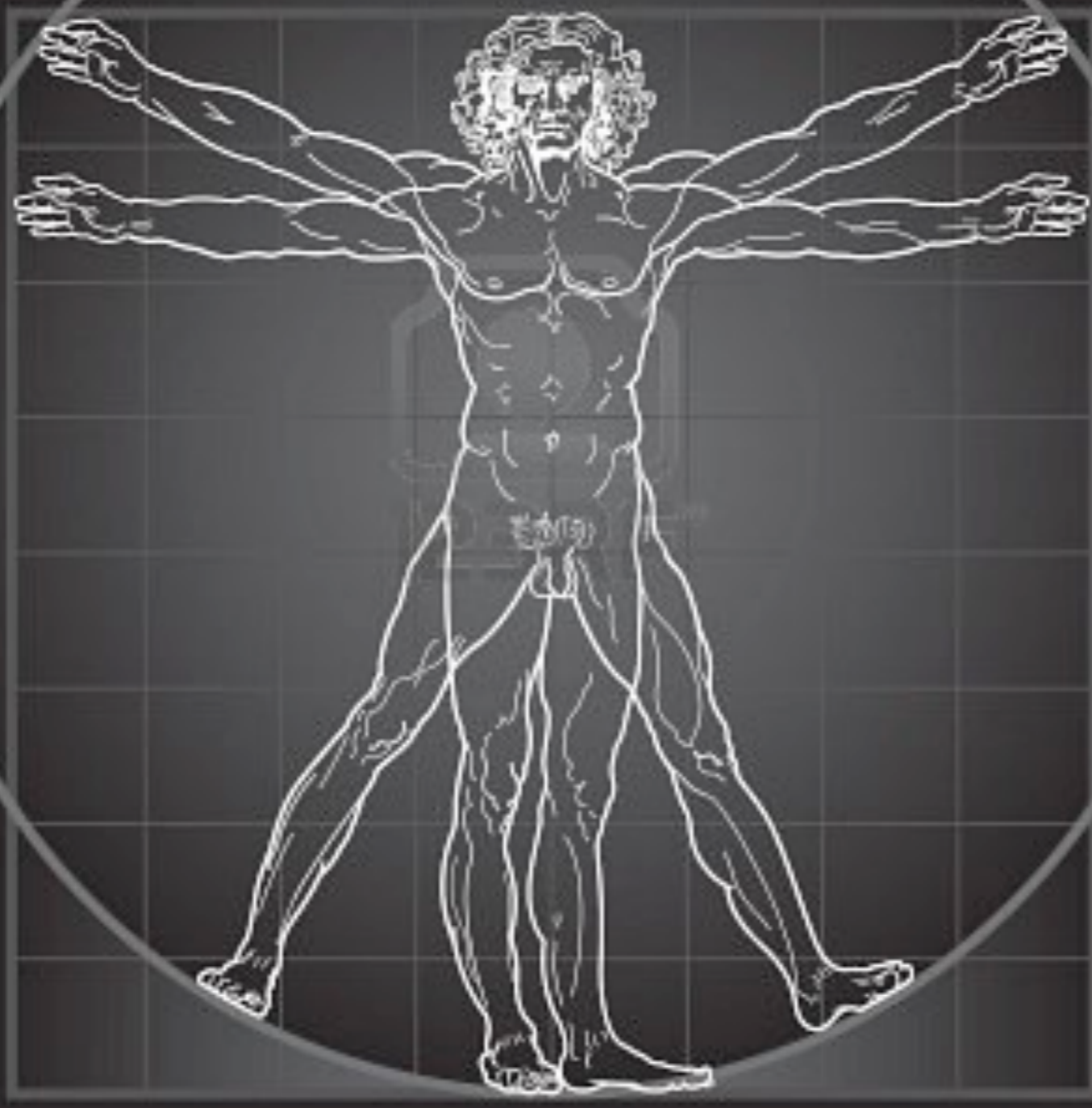
*Beyond Arms Control...now we need GSTM verification for the Earth,*

*CBD, CCD, UNCLOS, Montreal Protocol, Kyoto Protocol - UNFCCC and all the others like Transboundary Air Pollution.*

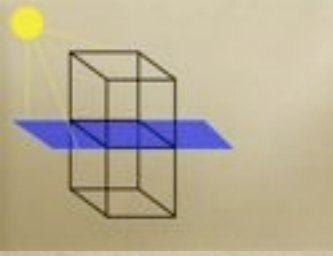




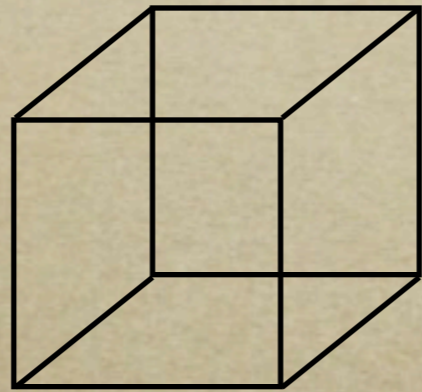
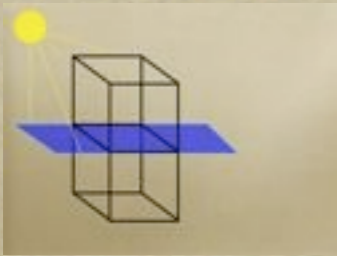
# Anthropocene



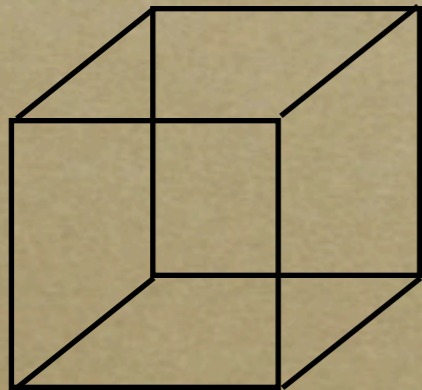
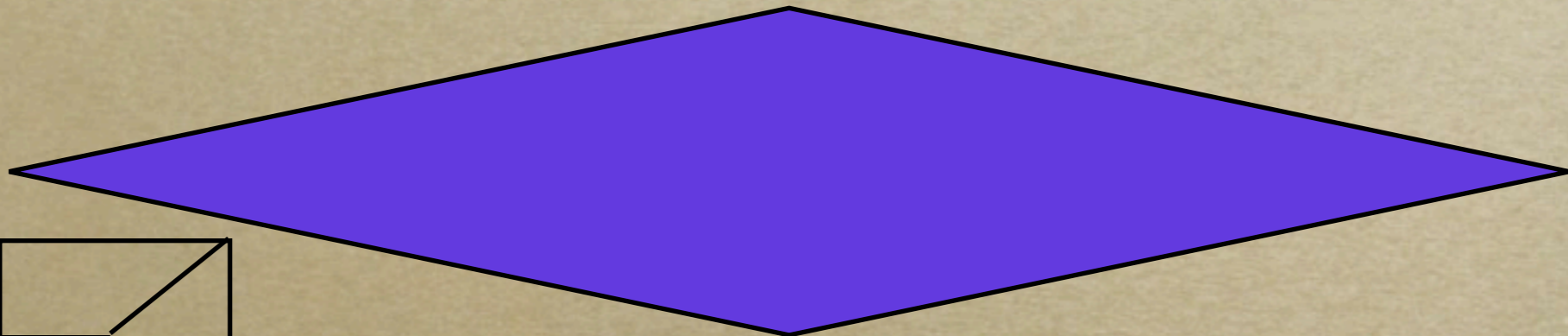




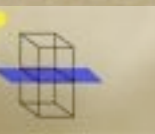
# *Perceptions of sea level:*



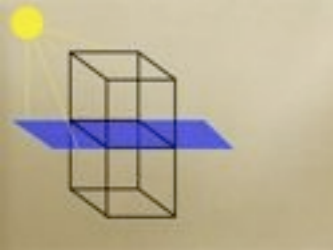
*10km<sup>3</sup> above sea level*



*10km<sup>3</sup> below sea level*



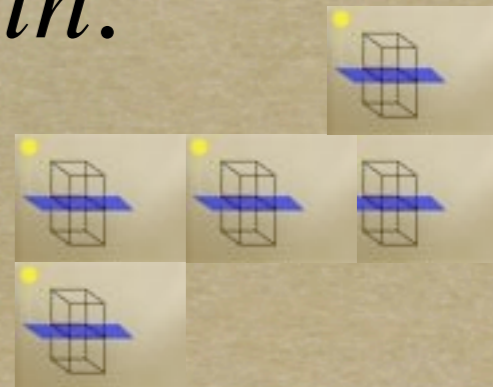




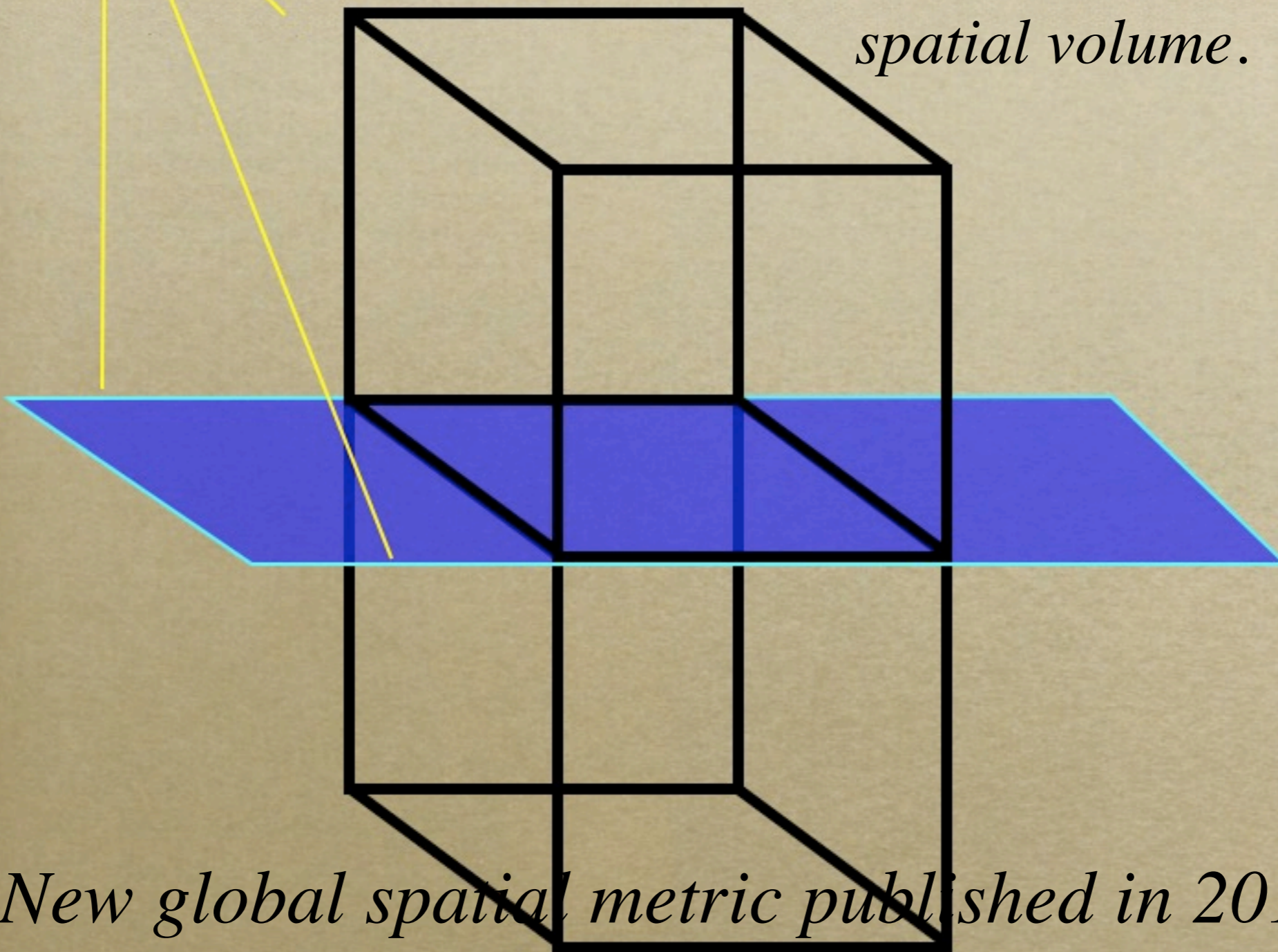
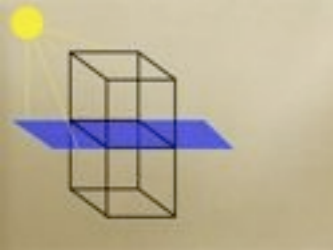
*GSTM map: 1-Water:air, liquid, solid and  
2-Human Suffering Index and  
3-Girl Education age ten  
in the new global geography curriculum K12  
using the Geocoded Spatial Transparent Metric  
= GSTM is global mapping tool.*

*What follows is an attempt to show the many  
measuring and counting (data) facets of the  
Geocoded Spatial Transparent Metric.  
GSTM begins in Kindergarten. Age five studies  
the three elements that make the Earth:  
land, air and water.*

*1m<sup>3</sup>:10km<sup>3</sup>x2*







$10\text{km}^3 \times 2 =$

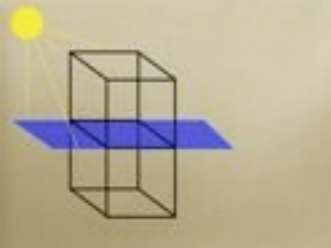
Published:

Geocoded Spatial Transparent Metric.

*Globally it is a unique rectangular spatial volume.*

*New global spatial metric published in 2011 by  
World Ecology Report*





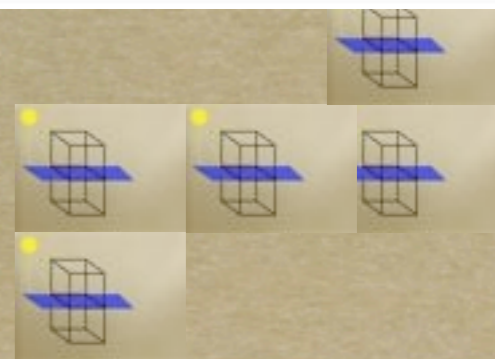
# Policy

**TABLE 1**  
**HOW INTERNATIONAL ENVIRONMENTAL INSTITUTIONS BOOST GOVERNMENTAL CONCERN, THE CONTRACTUAL ENVIRONMENT, AND STATE CAPACITY.**

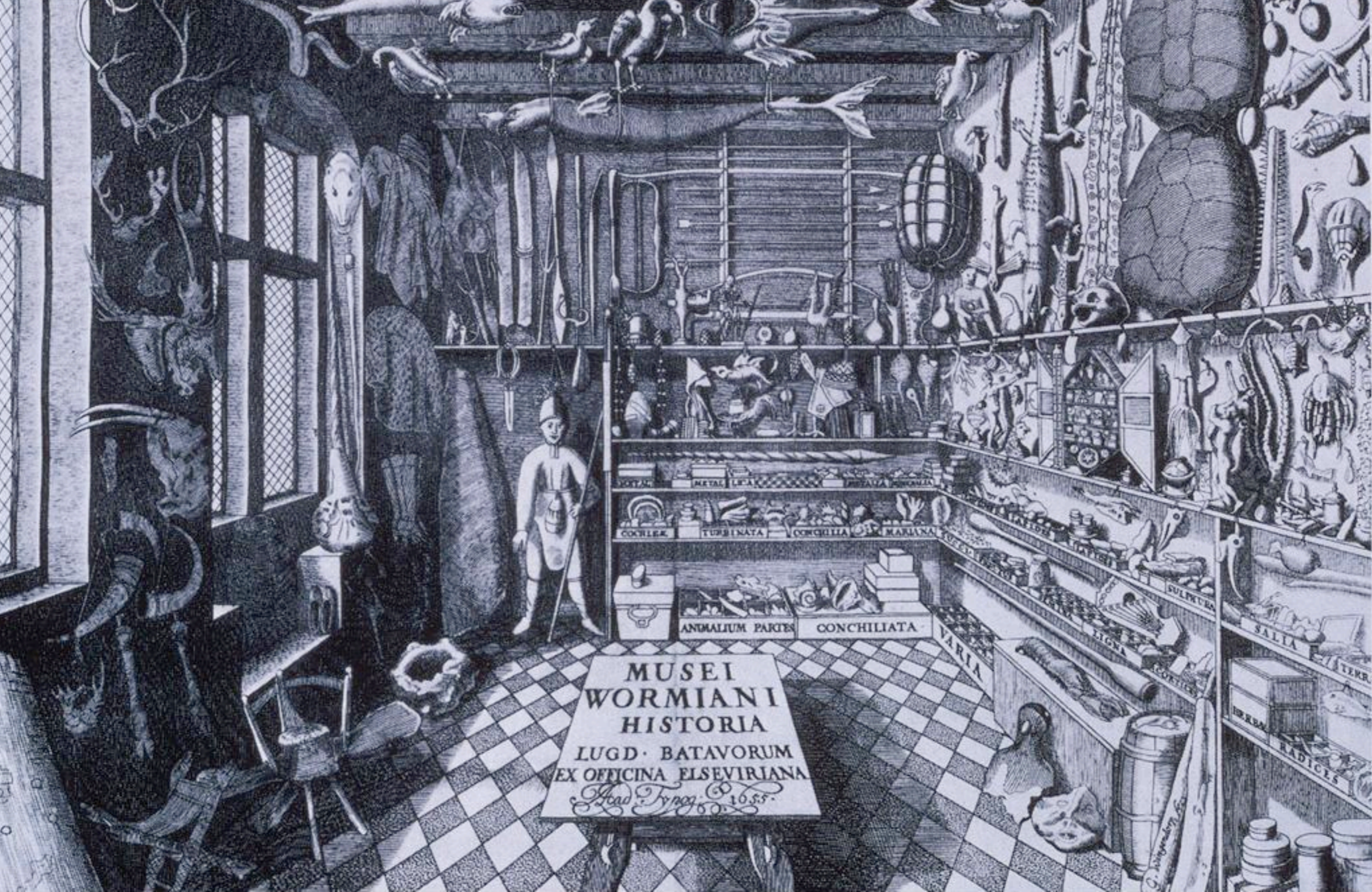
| <b>Roles of institutions</b>    | <b>Institutional activities</b>   |
|---------------------------------|---|
| Increase governmental concern   | Facilitate direct and indirect links<br>Create, collect, and disseminate scientific knowledge<br>Create opportunities that magnify domestic public pressure   |
| Enhance contractual environment | Provide bargaining forums that reduce transaction costs and create an iterate decisionmaking process<br>Conduct monitoring of environmental quality, national environmental performance, and national environmental policies<br>Increase national and international accountability              |
| Build national capacity         | Create interorganizational networks with operational organizations to transfer technical and management expertise<br>Transfer financial assistance<br>Transfer policy-relevant information and expertise through workshops and training programs<br>Boost bureaucratic power of domestic allies |



<http://www.ciesin.org/docs/003-001/tab1.gif>







*Global Spatial Think: Human Health, 1400 new Emerging Infectious Diseases (EIDs)---data beyond Museums, GSTM Map*





Anxiety  
Stress



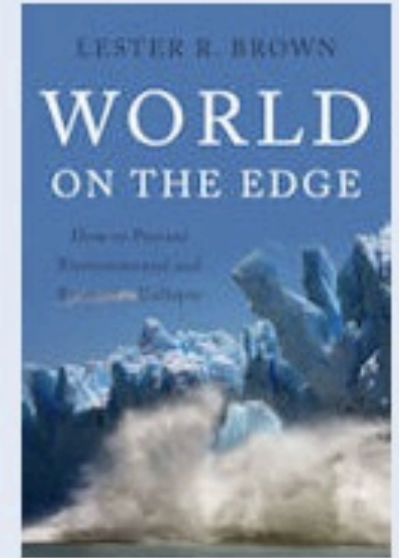
Lester R. Brown  
President



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dedicated to planning a sustainable future  
as well as providing a roadmap of how to  
get from here to there.

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*"Urban transport systems based on a combination of rail lines, bus lines, bicycle pathways, and pedestrian walkways offer the best of all possible worlds in providing mobility, low-cost transportation, and a healthy urban environment." –Lester R. Brown, Plan B 4.0: Mobilizing to Save Civilization.*

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AUGUST 02, 2011

**World on the Edge by the Numbers – Grain Production Falling as Soil Erosion Continues**

The thin layer of topsoil that covers much of the earth's land surface is the foundation of civilization. As long as soil erosion on cropland does not exceed new soil formation, all is well. But once it does, it leads to falling soil fertility and eventually to land abandonment. As countries lose their topsoil through **overgrazing**, **overplowing**, or **deforestation**, they eventually lose the...

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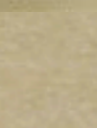
JULY 20, 2011

► **Growing Water Deficit Threatening Grain Harvests**

JULY 12, 2011

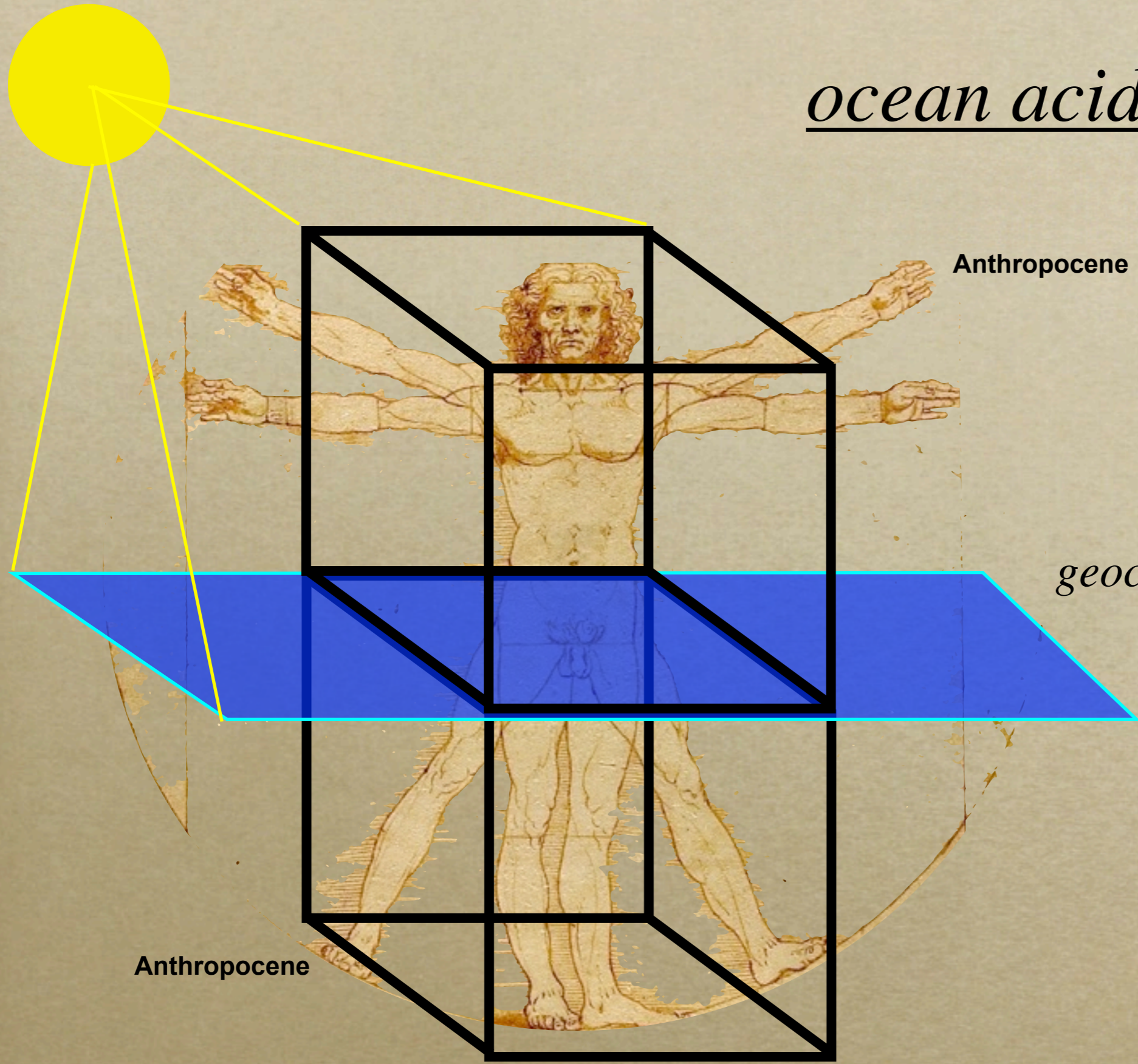
► **World on the Edge by the Numbers – Shining a Light on Energy**

*National Academy of Sciences in 2006 writes use GIS and GPS technology in K12 schools.*





# *ocean acidification*



**Anthropocene**

*geocoded zero: sea level*

*10km<sup>3</sup>x2 : x,y,z,t*

**Anthropocene**

*Geocoded Spatial Transparent Metric : GSTM :  
ten kilometers cubed stacked : spatial volumetric rectangle*





# *Geocoded Spatial Transparent Metric*

## Report: Academies' Findings

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### **Learning to Think Spatially: GIS As A Support System in the K-12 Curriculum (2006)**

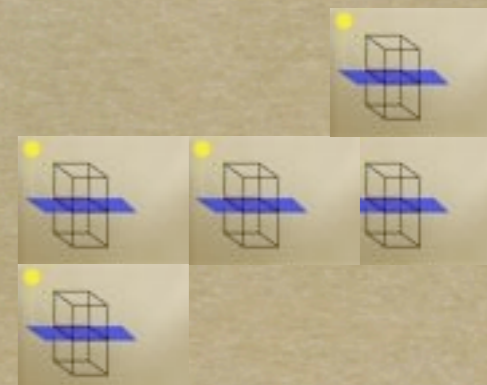
 Like  2 people like this.

Spatial thinking is a cognitive skill that can be used in everyday life, the workplace, and science to structure problems, find answers, and express solutions using the properties of space. It can be learned and taught formally to students using appropriately designed tools, technologies, and curricula. This report explains the nature and functions of spatial thinking and shows how spatial thinking can be supported across the K-12 curriculum through the development of appropriate support systems. A geographic information system (GIS) is an example of a support system that, with recommended redesigns, can foster spatial thinking across the curriculum. The report calls for a national initiative to integrate spatial thinking into existing standards-based instruction across the school curriculum such as in mathematics, history, and science classes; it does not require the development of a new, separate course focusing solely on spatial thinking. The goal of this initiative is to create a generation of students who learn to think spatially in an informed way.

[Read/Purchase](#)

$$GSTM=10km^3x2$$

*stacked ten kilometer cubes globally--*





*Rethinking global education for Sustainable Development:  
think 'spatial think", think GSTM K12+4+.GOV +.EDUas  
'Game Changer"*

► **Scholarly articles for NATIONAL ACADEMY OF SCIENCES 2006 SPATIAL THINKING**



[The use of virtual globes as a spatial teaching tool with ...](#) - Schultz - Cited by 16

[The use cases of digital earth](#) - Goodchild - Cited by 23

[The fourth R? Rethinking GIS education](#) - Goodchild - Cited by 7

[PDF] [The Use of Virtual Globes as a Spatial Teaching Tool with ...](#)  

[week9neogeog.pbworks.com/.../The+Use+of+Virtual+Globes+as+a+Spatial...](http://week9neogeog.pbworks.com/.../The+Use+of+Virtual+Globes+as+a+Spatial...)

File Format: PDF/Adobe Acrobat - [Quick View](#)

by RB Schultz - 2008 - Cited by 16 - [Related articles](#)

**spatial thinking** or spatial literacy. Researchers use related terms, such as spatial ability, spatial concepts, spatial ... geography (**National Academy of Sciences 2006**). ... ArcGIS Explorer from **ESRI**, Skyline's TerraExplorer, and ...

[PDF] [GIS in U.S. Urban Studies and Planning Education](#)  

[bss.sfsu.edu/nsfgis/download/legates\\_calgis.pdf](http://bss.sfsu.edu/nsfgis/download/legates_calgis.pdf)

File Format: PDF/Adobe Acrobat - [Quick View](#)

by R LeGates - Cited by 1 - [Related articles](#)

There is worldwide interest in incorporating **spatial thinking** and ... understanding, research, and professional practice (**National Academy of Science, 2006**; ..... The **ESRI** Guide to GIS Analysis, Volume 2. Spatial Measurements and ...


[Learning to Think Spatially - National Academies Press](#)  

[www.nap.edu/catalog/11019.html](http://www.nap.edu/catalog/11019.html) - [Cached](#)

**Spatial thinking** is a cognitive skill that can be used in everyday life, ... Status: Available Now. Size: 332 pages, 7 x 10. Publication Year: **2006** ... Geographic Information Science Across the K-12 Curriculum, Committee on Geography, National Research Council .... **National Academy of Sciences**. All rights reserved. ...







# *from NAS2006 'Learning to Think Spatially'*

## **Key Findings**

- Geographic information science has significant but as yet unrealized potential for supporting spatial thinking across a range of subjects in the K-12 curriculum.
- No matter how well designed support tools for spatial thinking might be, they will not be effective without societal recognition of the importance of spatial thinking and without an educational commitment to teaching spatial thinking to all students in all grades.
- Spatial thinking can be supported and facilitated by the development of a coherent suite of supporting tools, ranging from low to high technology in nature, that can (1) address a range of types of problems, (2) use a range of types and amounts of data, and (3) require different levels of skill and experience.
- Spatial thinking is not an add-on to an already crowded school curriculum, but rather a missing link across that curriculum. Integration and infusion of spatial thinking can help to achieve existing curricular objectives. Spatial thinking is another lever to enable students to achieve a deeper and more insightful understanding of subjects across the curriculum.
- Standards for spatial thinking should be general guidelines for what students need to know about concepts of space, tools of representation, and processes of reasoning in order to be able to solve problems. These general guidelines must be integrated into the particular content knowledge expectations for various subject matter disciplines.
- Support systems for spatial thinking must meet three requirements to be successful: they must (1) allow for the spatialization of data, (2) facilitate the visualization of working and final results, and (3) perform a range of functions (transformations, operations, and analyses).
- The committee identified three mechanisms that led to the development of GIS software: the academic model, the commercial model, and the collaborative model. These three models offer distinct options for the redesign of GIS software for the K-12 context. All three mechanisms appear to have merit, as well as potential pitfalls. The choice among them, therefore, should be made by the appropriate funding agencies.
- The committee views spatial thinking as a basic and essential skill that can be learned, that can be taught formally to all students, and that can be supported by appropriately designed tools, technologies, and curricula. With appropriate instruction and commensurate levels of low- and high-tech support, spatial thinking can become an invaluable lifelong habit of mind.
- While GIS can make a significant impact on teaching and learning about spatial thinking, it must be situated in a context wherein there is a systematic, standards-based approach to teaching spatial thinking, along with a suite of supporting tools available to do so. Taken alone, GIS is not the answer to the problem of teaching spatial thinking in American schools; however, it can play a significant role in an answer.





# *Ocean pH, primary productivity, chlorophyll ( $\text{mg/m}^3$ ) change.*

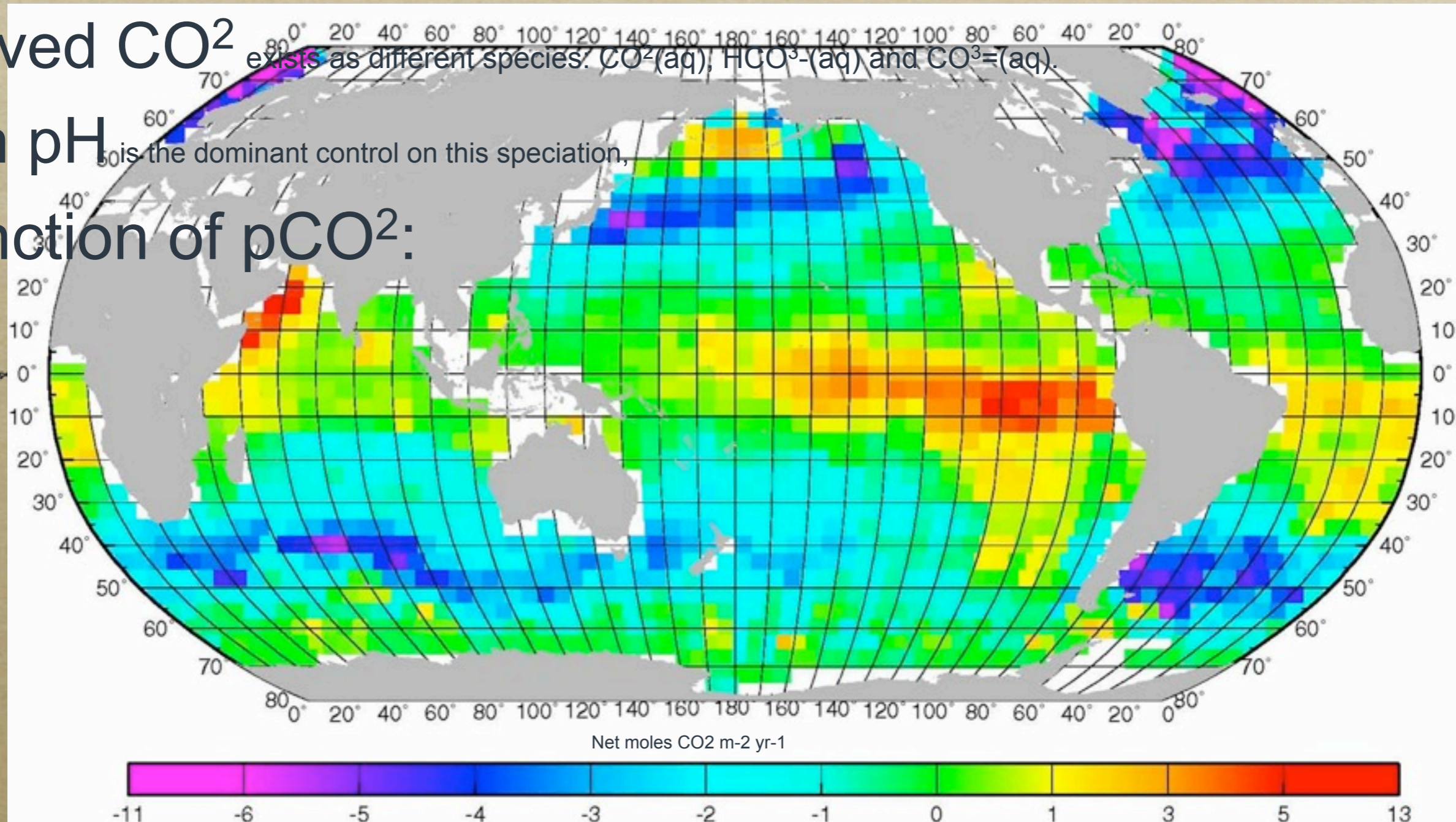
Dissolved  $\text{CO}_2$

exists as different species:  $\text{CO}_2(\text{aq})$ ,  $\text{HCO}_3^-(\text{aq})$  and  $\text{CO}_3^{2-}(\text{aq})$ .

Ocean pH

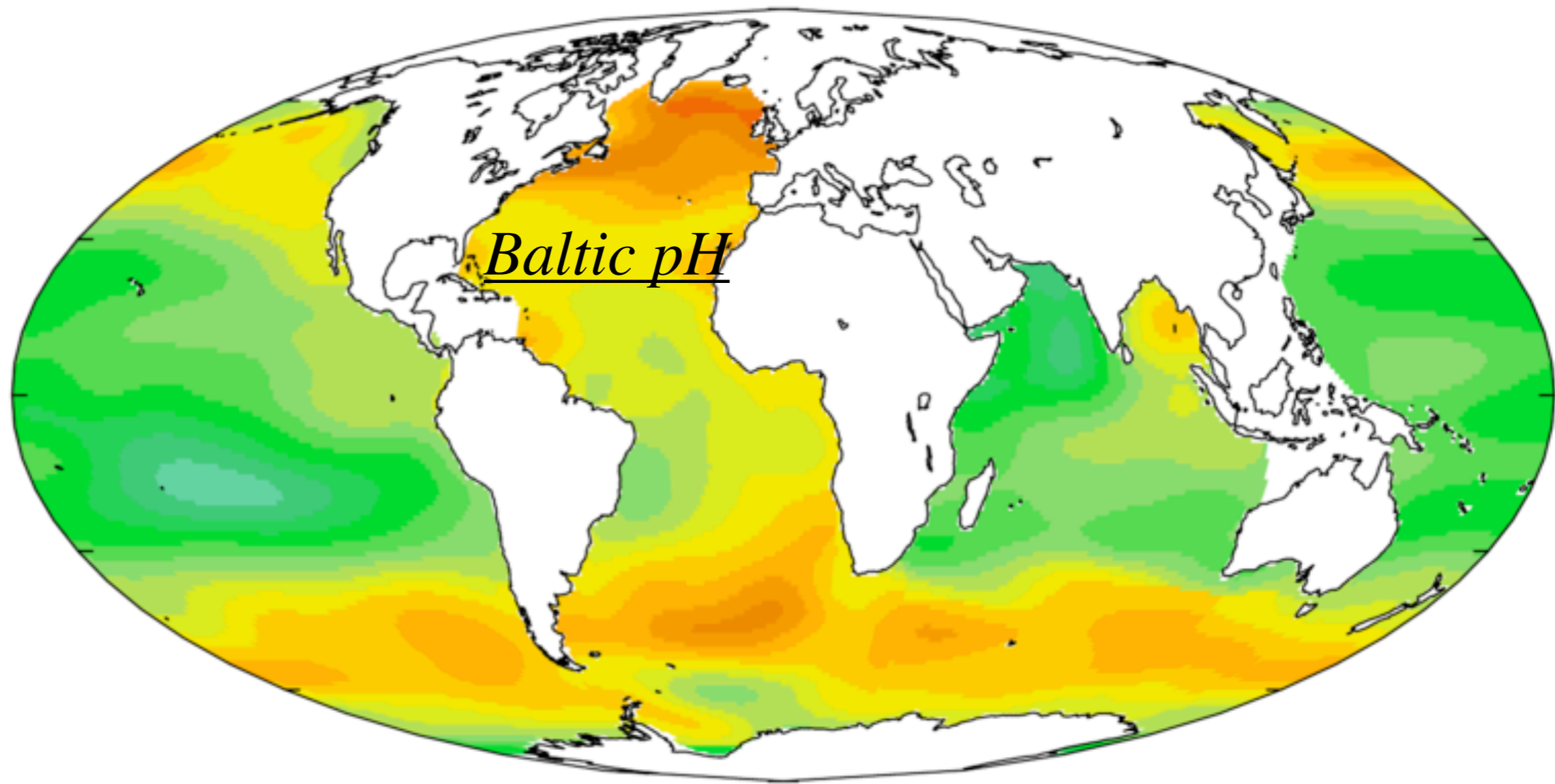
is the dominant control on this speciation,

itself a function of  $\text{pCO}_2$ :



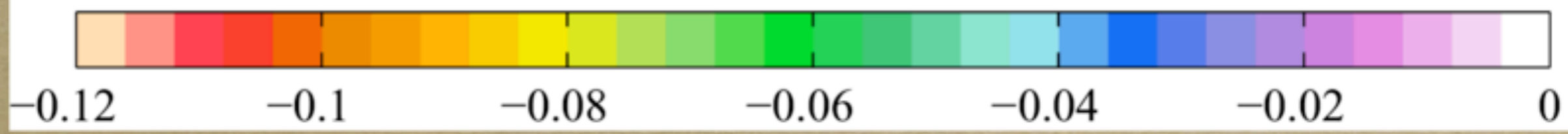
Coccoliths are very small shells of calcium carbonate that encapsulate a number of species of alga. Algae plays an important role in the global carbon-oxygen cycle and thus in our ecosystem. Our seawater has changed because of our emissions of greenhouse gases.



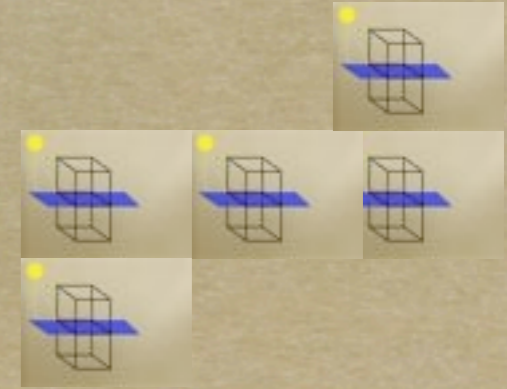


*Baltic pH*

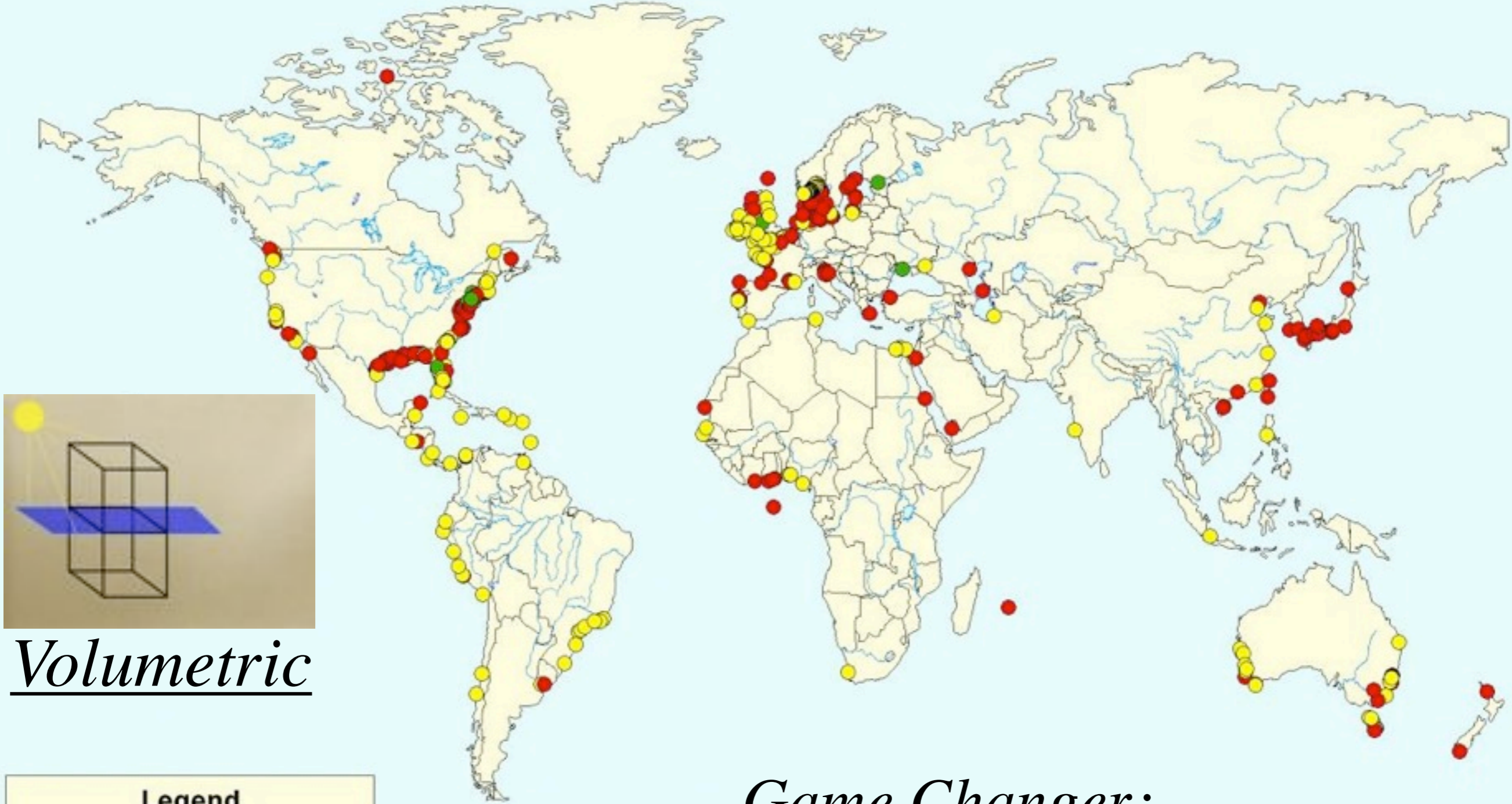
$\Delta$  sea-surface pH [-]



[http://en.wikipedia.org/wiki/File:WOA05\\_GLODAP\\_del\\_pH\\_AYool.png](http://en.wikipedia.org/wiki/File:WOA05_GLODAP_del_pH_AYool.png)







*Volumetric*

**Legend**

**Eutrophic and Hypoxic Areas**

- Areas of Concern
- Documented Hypoxic Areas
- Systems in Recovery

*Game Changer:*  
*Eutrophic and Hypoxic Spaces*



Data compiled from various sources by R. Diaz, M. Selman and Z. Sugg.

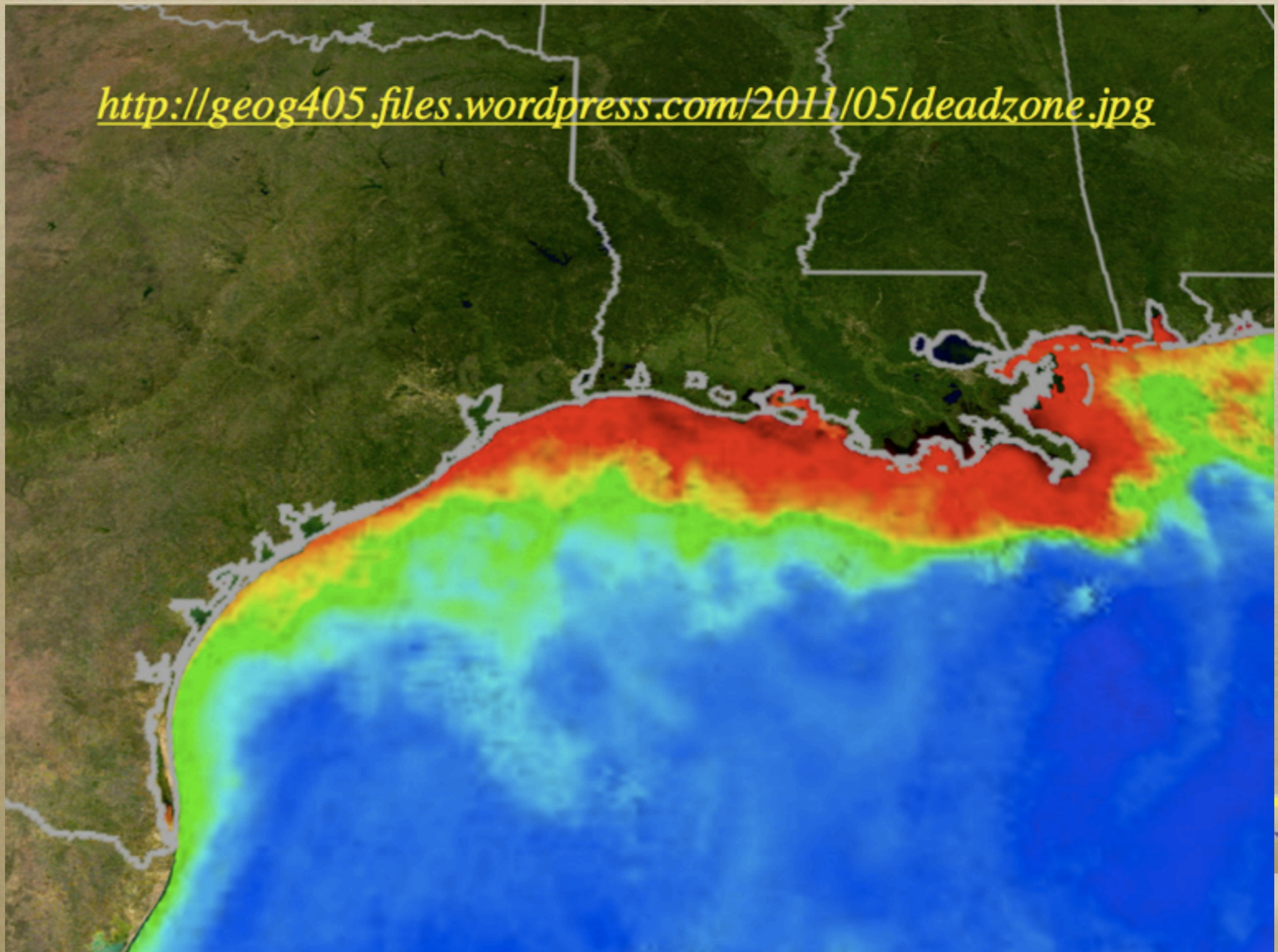


# *Cubic meters of oil in the spill?*

On July 15, 2010,

the leak was stopped by capping the gushing [wellhead](#), after it had released about 4.9 million barrels (780,000 m<sup>3</sup>) of [crude oil](#).

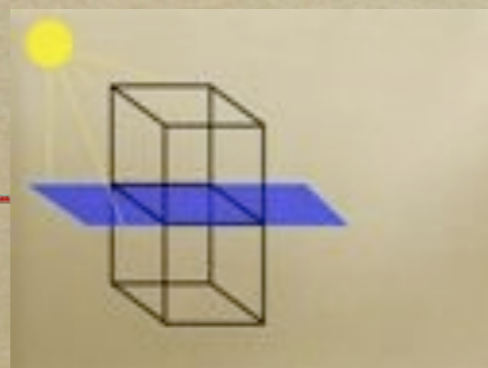
<http://geog405.files.wordpress.com/2011/05/deadzone.jpg>



[http://en.wikipedia.org/wiki/Deepwater\\_Horizon\\_oil\\_spill](http://en.wikipedia.org/wiki/Deepwater_Horizon_oil_spill)



*Thailand:  
Cave shows  
changes due to  
global climate  
change.*



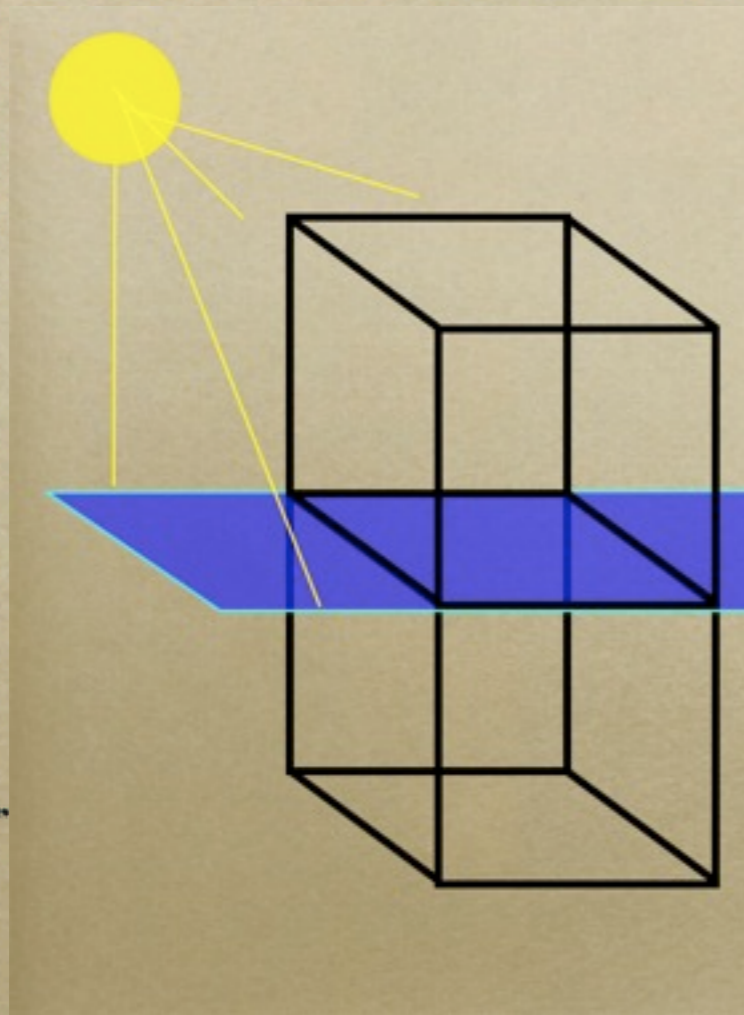
[http://  
climateaudit.files.wo  
rdpress.com/  
2009/04/  
dsc04163.jpg](http://climateaudit.files.wordpress.com/2009/04/dsc04163.jpg)

<http://climateaudit.files.wordpress.com/2009/04/dsc04106.jpg>

*Game Changers:  
Caves warm globally-*







Small Island Developing  
States : SIDS

<http://www.jnu.ac.in/Faculty/alramanathan/DSC00440.JPG>

*Geocoded Spatial Transparent*

*Metric  $GSTM = 10km^3 \times 2$*

*Measure  $1m^3$  within*

*Rectangular Volume*





# Game Changers:

## *Bikini Atoll*



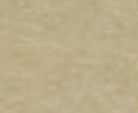
[http://images.nationalgeographic.com/wpf/media-live/photos/000/080/cache/atom-bomb-bikini-atoll\\_8003\\_990x742.jpg](http://images.nationalgeographic.com/wpf/media-live/photos/000/080/cache/atom-bomb-bikini-atoll_8003_990x742.jpg)



$10\text{km}^3 \times 2$



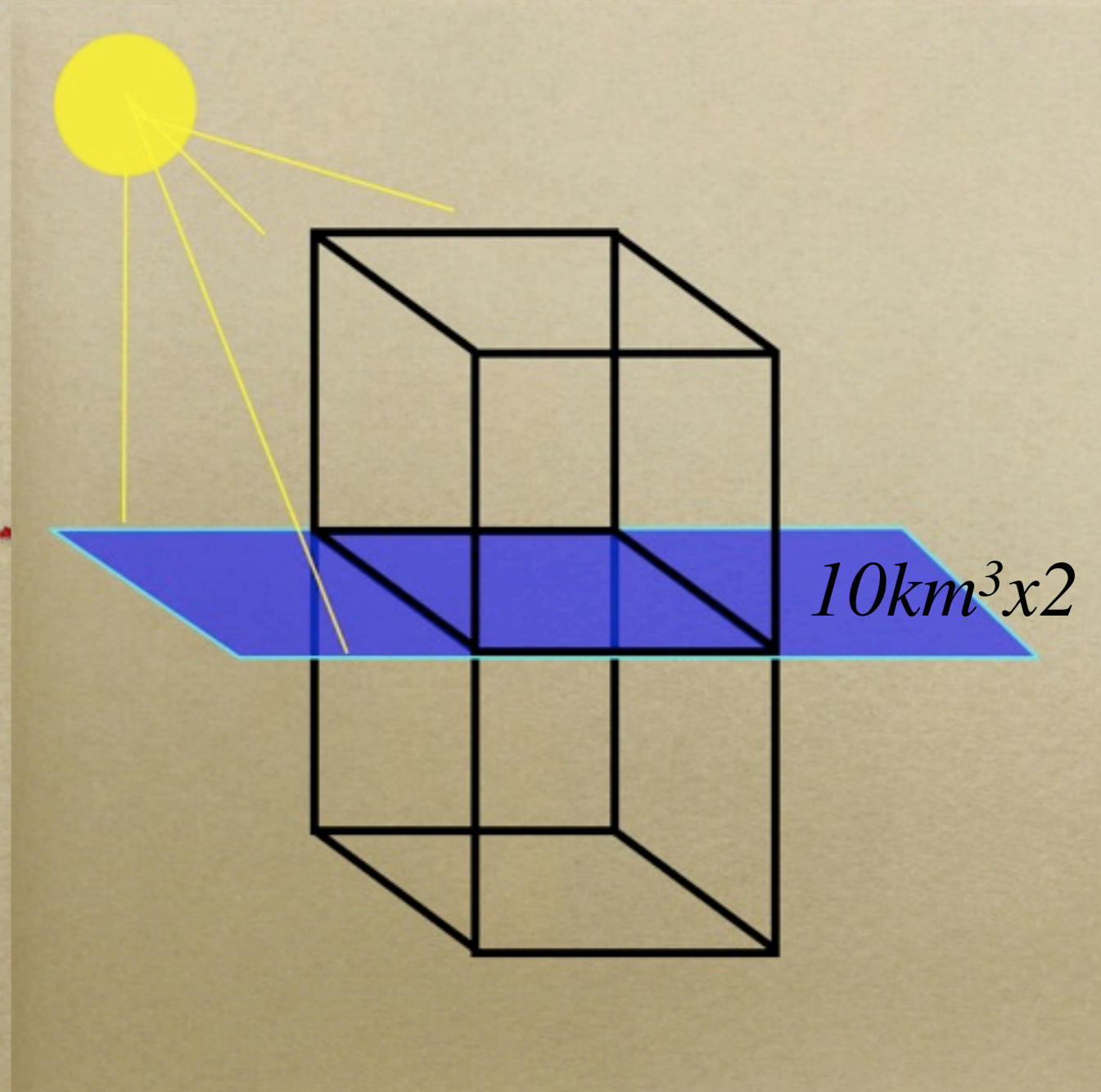
# Locations below sea level----- $10\text{km}^3 \times 2$





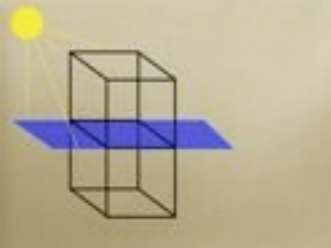
# Dark Metadata

*“Reseeing” the local GSTM:  
Ten kilometers cube stacked.*



*The Geocoded Spatial Transparent Metric*

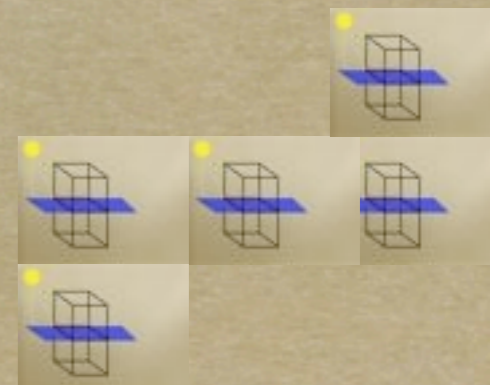




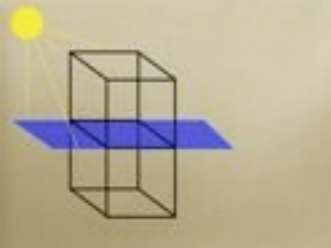
## The Geocoded<sub>1</sub> 10 Kilometer CubeStacked: A Tool for Making the Global, Local

The Geocoded Spatial Transparent Metric ( GSTM) takes in a volume of space above and below our feet.. This proposal suggests an educational metric tool for schools. This geocoded cube stacked would reflect our local reality, including its unique geography, ecosystem and neighborhood relationships.

We could set goals for indicators to be measured, at a small scale, like one meter cubed. Then, through the GSTM program we could enter data about our unique locality and our progress towards local sustainability. By becoming familiar with our own neighborhood, we would get better at understanding what is happening on a global scale and seeing how we are all interconnected. This would help us connect the data dots (1m<sup>3</sup>:10km<sup>3</sup>x2) and make better choices in health and the environment. By understanding our local environment, we will get a better at understanding the global ramifications of our behavior at home.







HUMANITIES 2.0

## Digital Maps Are Giving Scholars the Historical Lay of the Land

By [PATRICIA COHEN](#)

Published: July 26, 2011

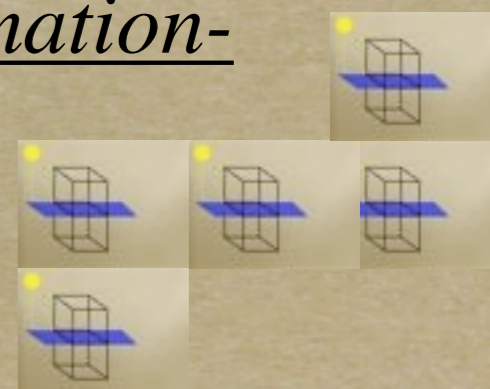


Few battles in history have been more scrutinized than Gettysburg's three blood-soaked days in July 1863, the turning point in the [Civil War](#). Still, there were questions that all the diaries, official reports and correspondence couldn't answer precisely. What, for example, could Gen. Robert E. Lee actually see when he issued a series of fateful orders that turned the tide against the Confederate Army nearly 150 years ago?

[Enlarge This Image](#)

Jason P. Smith for The New York Times

<http://www.nytimes.com/2011/07/27/arts/geographic-information-systems-help-scholars-see-history.html>





Neural biology and spatial thinking are related. Humans can compare and measure.

We map and use our hippocampus to remember and navigate our world.

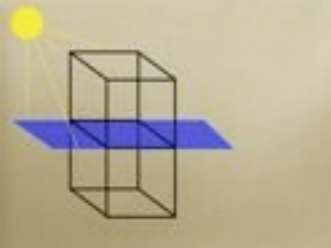
GSTM can facilitate this human ability.

*ESRI and  
GSTM global:  
geography  
ecological  
networks are  
scaleable.*

*Relationship: digital web based  
information and neural  
networks and ecology by  
extension.*







“The capacity to imagine being somewhere else and seeing the environment from a different point of view is crucial for spatial planning in daily life and for understanding the intentions, actions, and state of mind of other people.” <http://cercor.oxfordjournals.org/content/early/2011/05/30/cercor.bhr101.abstract>

## Hippocampus

Neil Burgess: “Some recent behavioral, neuropsychological, and functional neuroimaging experiments are reviewed, in which virtual reality (VR) is used to allow controlled study of navigation and memory for events set within a rich large-scale spatial context.

These studies provide convergent evidence that the human hippocampus is involved in both tasks, with some lateralization of function (navigation on the right and episodic memory on the left). A further experiment indicates hippocampal involvement in retrieval of spatial information from a shifted viewpoint.”

“I believe that the natural level for a mechanistic understanding of behavior is the level of neurons. Accordingly, as someone interested in memory, I aim to gain an appreciation of how the actions of single neurons can result in this most important cognitive function. The possible complexity of the action of networks of neurons and their consequences for behavior means that computational modeling has a central importance in helping to integrate information gained from experiments at the various levels of cells, systems, and behavior. The term “memory” has been used to describe a wide range of phenomena; here I consider something closely related to its meaning in everyday usage: our enduring memory for personally experienced events, known to psychologists as “episodic” memory (Tulving, 1983). The many and varied operational definitions of episodic memory tend to agree that it is crucial for tasks demanding the recollection of information tied to a particular spatio-temporal context (i.e., the details of an event). Where the stored information is divorced from a particular spatio-temporal context (semantic memory), or where context is not required (as in simple recognition), episodic memory need not be involved (see, e.g., Gardiner & Java, 1990; Knowlton & Squire, 1995).

Note that all three processes (familiarity-based recognition, semantic memory, and episodic memory) are included in the definition of declarative or explicit memory (e.g., Squire & Zola-Morgan, 1991). ” <http://www.icn.ucl.ac.uk/nburgess/papers/qjep02.pdf>

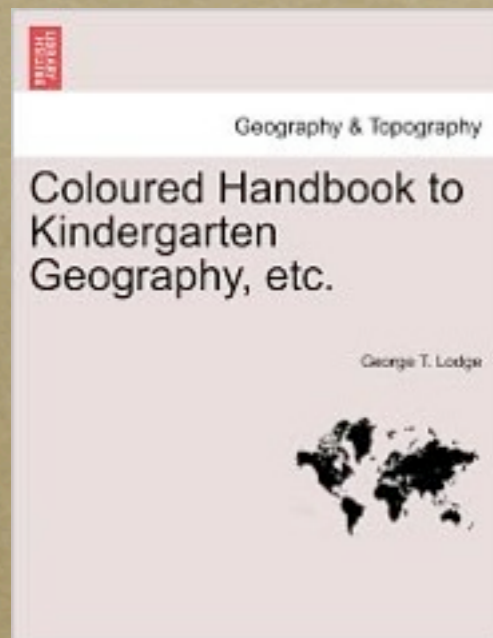






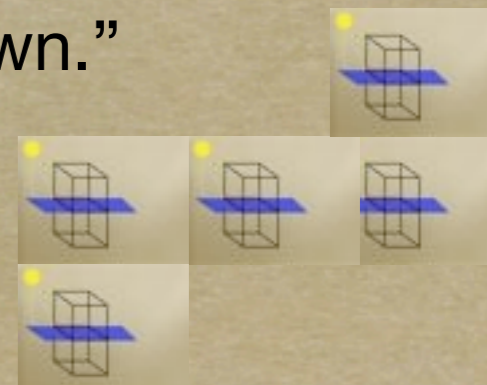
*educate girls globally  
and use technology like GSTM*

Humans are mappers...let us improve early childhood education with the use of the Geocoded Spatial Transparent Metric. Virtual Reality (VR) and beginning with actual and authenticated mapping the way to school, the roots of a favorite tree, and the air above the school door within their local GSTM. Children...thus placing emphasis on “their self-regulation skills, which includes the ability to pay attention, follow instructions and remember what they are told.”




“Topographical Memory and the Hippocampus: Activation of the right hippocampus correlates with accuracy of navigation in the virtual reality (VR) town.”

<http://www.icn.ucl.ac.uk/nburgess/papers/Burgess02.pdf>








## The Geocoded<sub>1</sub> 10 Kilometer CubeStacked: A Tool for Making the Global, Local

GSTM using map coordinates [10km<sup>3</sup> x 2 (x, y, z, t)] can monitor such things as global carbon in soil, air, land, sea and biodiversity.

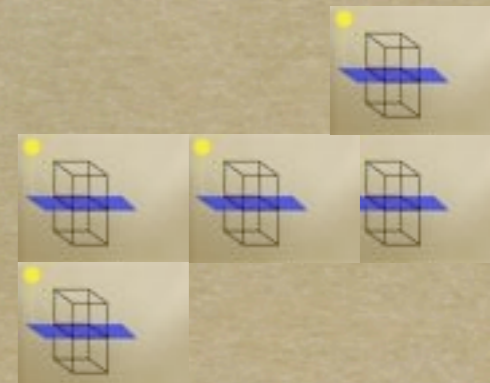
Think Global: GSTM is a rapid risk assessment tool, particularly, as it has valuable application in the verification of local biodiversity (CBD) integrated into any future climate change treaty (UNFCCC). This might reveal interesting patterns upon which to take immediate local action regard- ing the health of our children. It is hoped that we might be able to “learn to see” spatially at the learned scale of the ten kilometer cubed stacked. GSTM ten kilometers cube stacked is a scale we might be able to grasp to positively impact our own health and local ecosystem biodiversity.



By Tamra Raven, [web.mac.com/tamraraven](http://web.mac.com/tamraraven) References: 1) Quirk, Nancy. (March 24, 2002) Thinking Globally, Acting Locally: A Service Learning Approach to Teaching and Learning ‘Global Environmental Politics’. 2) National Academy of Sciences, Committee on the Support for the Thinking Spatially: The Incorporation of Geographic Information Science Across the K-12 Curriculum, Committee on Geography, National Research Council. (2006). 3) ESRG (Eastern Research Group). (January 22, 2010). Marine Spatial Planning Stakeholder Analysis. NOAA Coastal Service Center. Charleston, SC. 4) ESRI. (2008). GIS for K-12 Education. What is it Like Around My Community, My Country, My World? Corporate Office, Redlands, CA. Retrieved from [ESRI K-12 GIS Support](#) (Geospatial Entity Object Code) is a standardized all-natural number representation format specification for geospatial coordinate measurements that provide details of the exact location of geo-spatial point at, below, or above the surface of the earth at a specified moment of time.

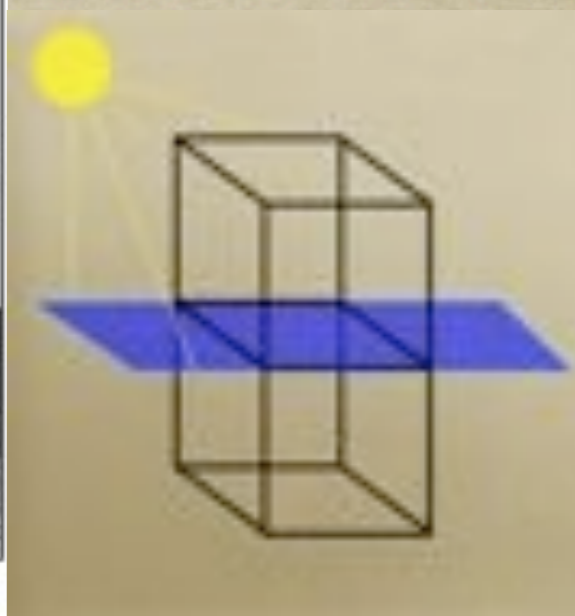
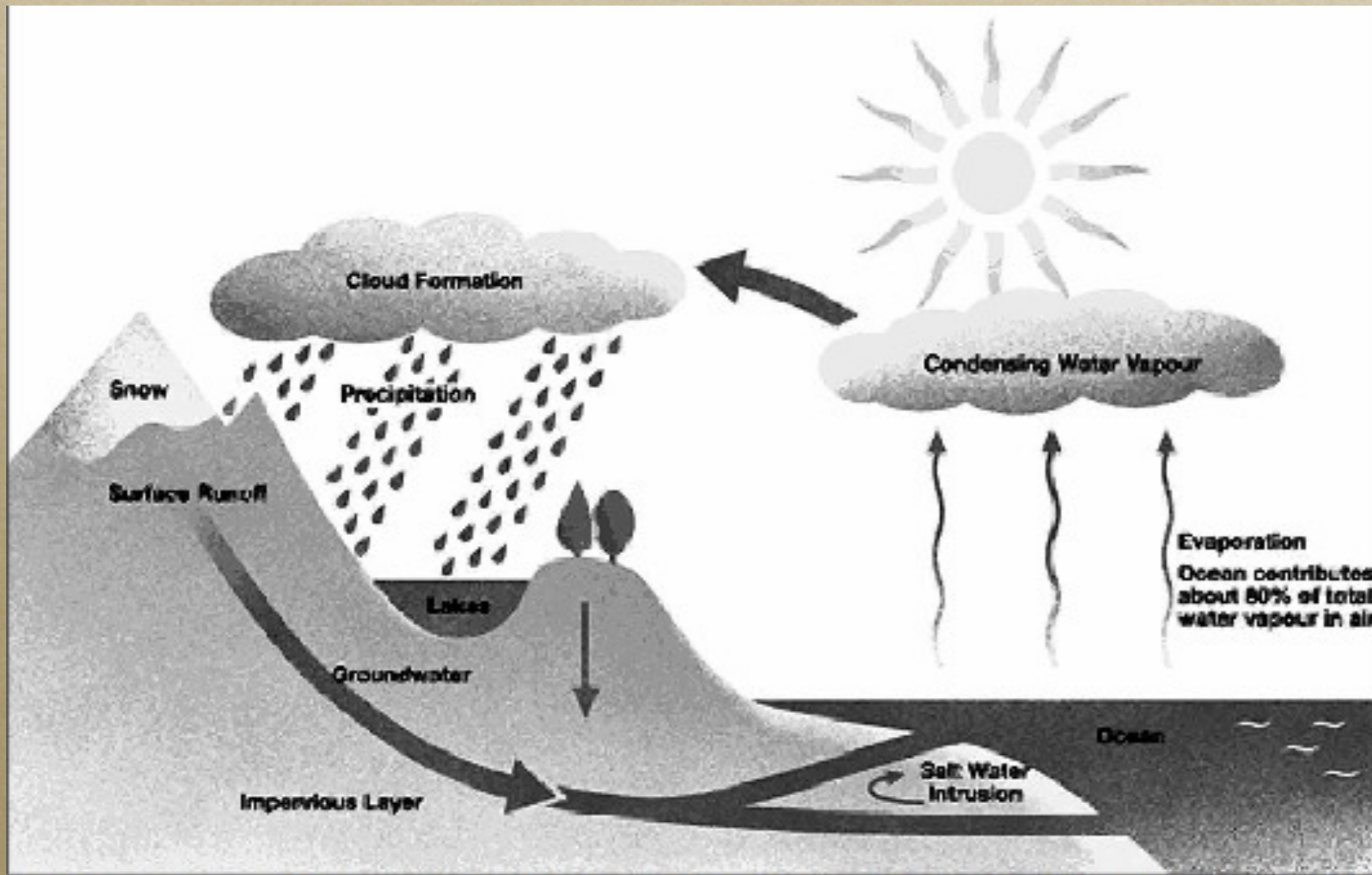
*Published GSTM:*

[http://www.worldinfo.org/wp-content/uploads/docs/wer/english/2011\\_Spring\\_Vol\\_XXIII\\_No\\_1.pdf](http://www.worldinfo.org/wp-content/uploads/docs/wer/english/2011_Spring_Vol_XXIII_No_1.pdf) see Page 10



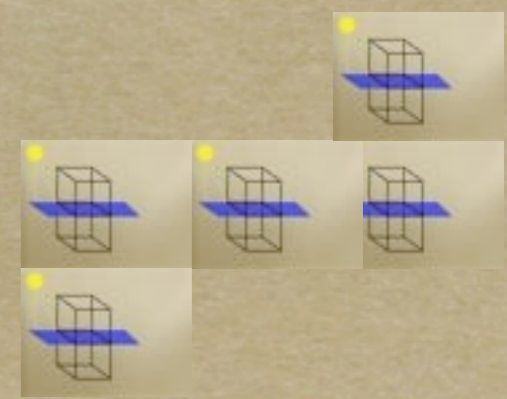


*Kindergarten maps water and land using GSTM locally.*



**Source:** [sawater.com.au/SAWater/Education/OurWaterSystems/The+Water+Cycle.htm](http://sawater.com.au/SAWater/Education/OurWaterSystems/The+Water+Cycle.htm)

[http://www.worldinfo.org/wp-content/uploads/docs/wer/english/2011\\_Spring\\_Vol\\_XXIII\\_No\\_1.pdf](http://www.worldinfo.org/wp-content/uploads/docs/wer/english/2011_Spring_Vol_XXIII_No_1.pdf)







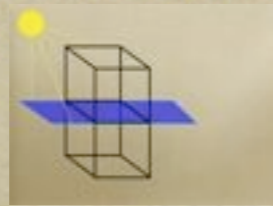
[http://www.mytripguru.com/Activities/194\\_tibet\\_\(8\).jpg](http://www.mytripguru.com/Activities/194_tibet_(8).jpg)

Mount **Everest**, 8848m (29029ft)





# *Global Mapping*



## Mangrove and Coral and Sea Grass

*Thinking spatially at  
one meter cube within  
Geocoded Spatial Transparent  
Metric*

[http://blogs.panda.org/coral\\_triangle/files/2010/03/  
D3X6973.jpg](http://blogs.panda.org/coral_triangle/files/2010/03/D3X6973.jpg)

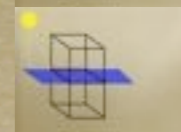
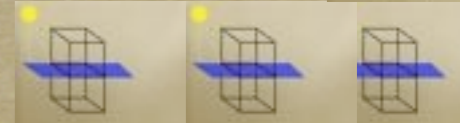






*GSTM=1m<sup>3</sup>:10km<sup>3</sup>x2  
global map plants  
globally.*

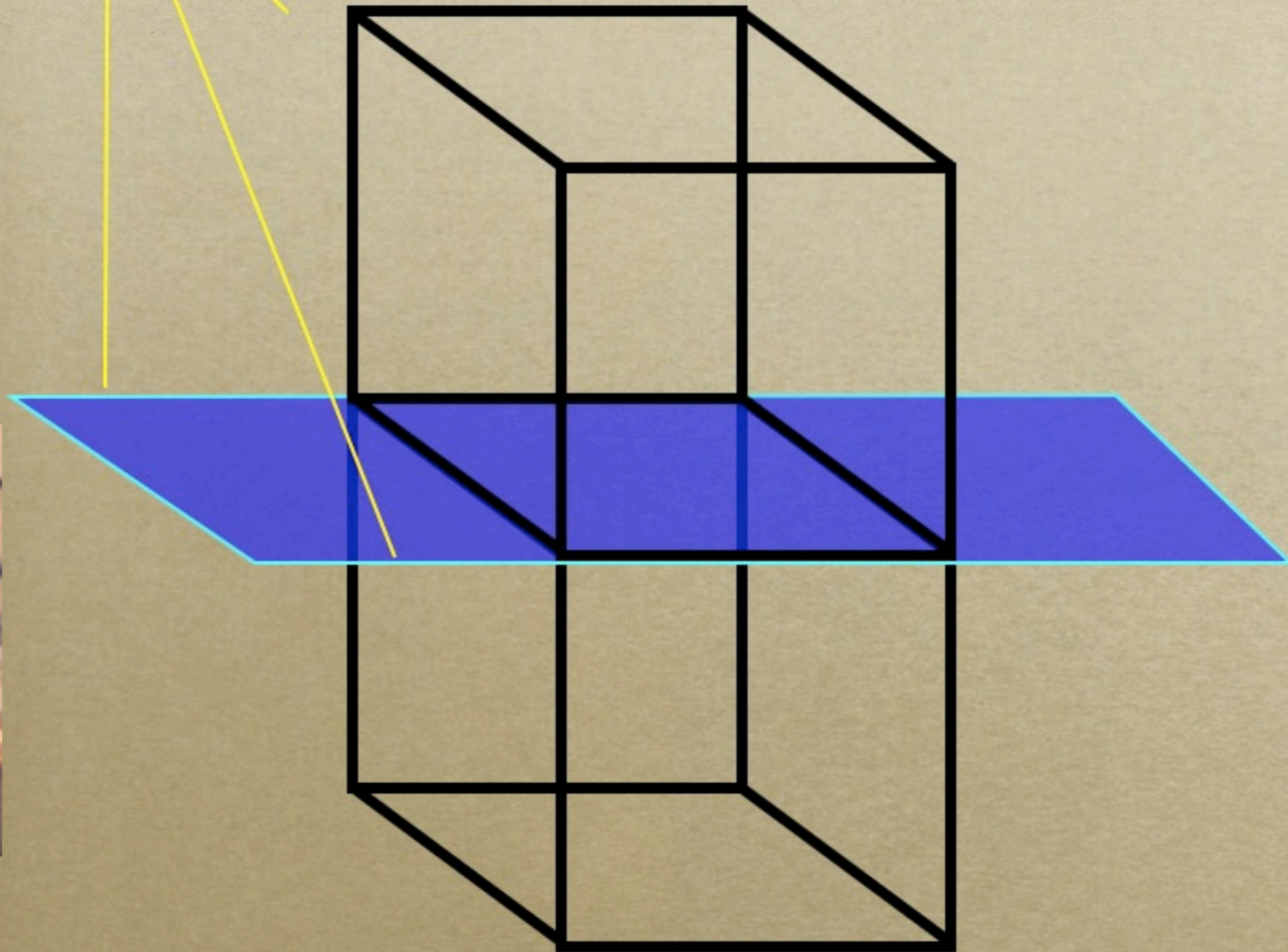
*Geocoded Spatial  
Transparent Metric as  
verification tool for  
Convention on  
Biological Diversity  
and global carbon in  
soil, air, water, and  
biodiversity  
verification under  
UNFCCC/Kyoto.*



[http://www.mikelevin.com/  
DeathValleyCactusLandscape800.jpg](http://www.mikelevin.com/DeathValleyCactusLandscape800.jpg)



*Humans, are visual, social, verbal, small group size mammals. We seek predictable proximity. Ecoplay: is Earth awareness education or survival behavior. We humans forget history. We do not do future planning well. We deny information in front of our face. Can the Geocoded Spatial Transparent Metric help us increase our alertness to potential threats to our health and well being?*



**Affect** (verb) To influence something without causing it to happen.

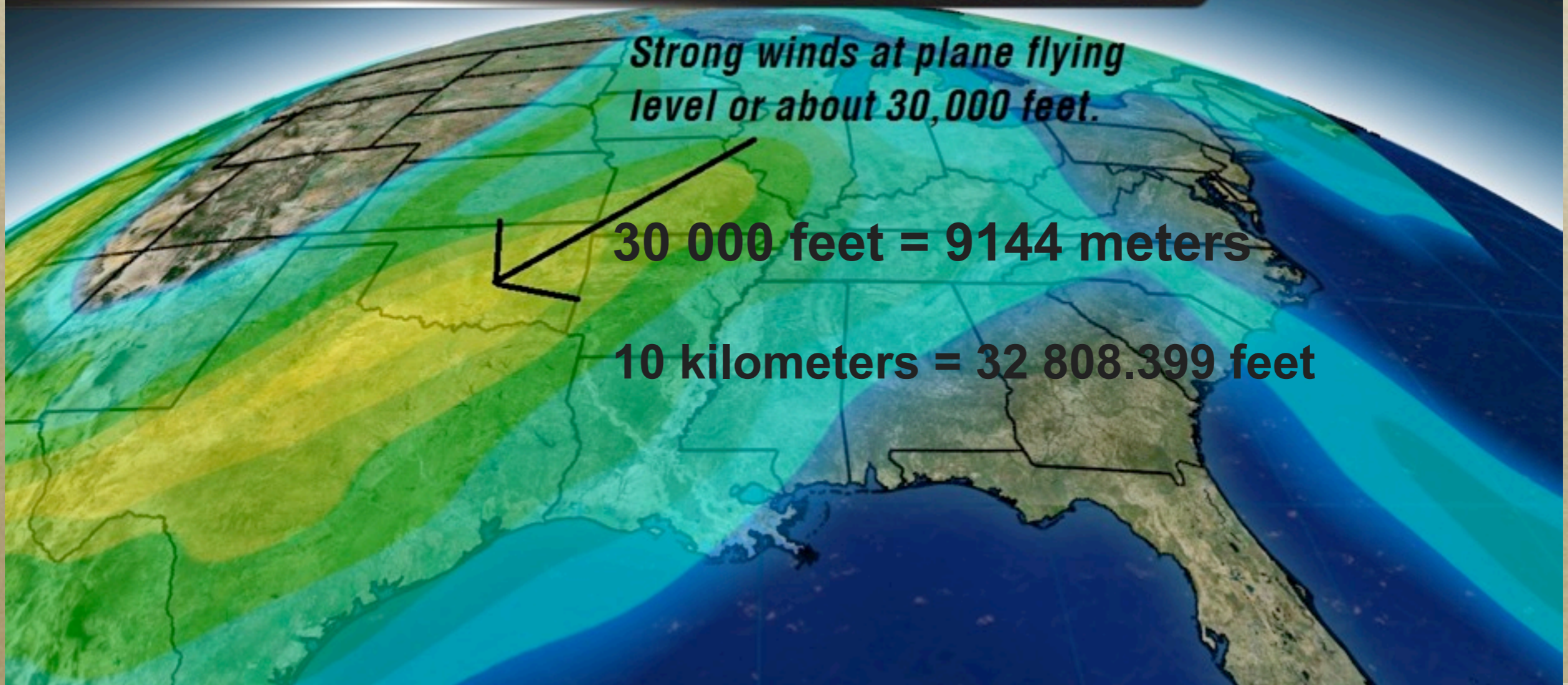
**Effect** (noun) Is the result that was accomplished or to directly cause something.





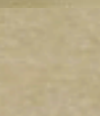
# JET STREAM

MONDAY EVENING

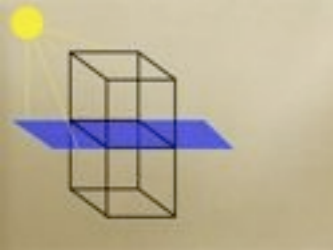


Discovery of jet stream after eruption of Krakatoa...1883:

*there is lots humans do not understand about the Earth, or climate, or biodiversity extinction...*







## *GSTM PM2.5*

*PM2.5 is an airborne particulate size.*

*GSTM mapping can be used in early warning mapping systems, perhaps GSTM and GOOGLE together to indicate pollution alerts. Disease clusters can be mapped globally using GSTM as well as the local GSTM scale of  $10\text{km}^3 \times 2$  to map local children and adult human health. New disease, genetic, environment relationships*

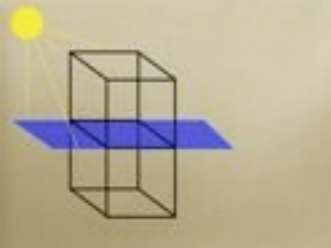
*can be mapped: Cancer and Cardiovascular Disease Mortality*

*Associated with Ambient Air Pollution and Cigarette Smoke:*

*Shape of the Exposure–Response Relationships.*







[PDF] [Guidance for a Global Monitoring Programme for Persistent Organic ...](#) +1

[www.chem.unep.ch/gmn/guidancegpm.pdf](http://www.chem.unep.ch/gmn/guidancegpm.pdf)

File Format: PDF/Adobe Acrobat - [Quick View](#)

Polychlorinated dibenzofurans. **POPs. Persistent Organic Pollutants** ..... sampling (~1 m<sup>3</sup>/min flow rate) at a super-sites with each sample separated .... air samplers have been used to **map** the spatial variability of **POPs** on a continental scale in ..... effectiveness of a legally binding international **agreement**. ...

[PDF] [Stream 4 – D4.2.2 Assessment of available models for studying the ...](#) +1

[www.thresholds-eu.org/public/thresholdsdeliverablespdf/D4.2.2\\_IQAB.pdf](http://www.thresholds-eu.org/public/thresholdsdeliverablespdf/D4.2.2_IQAB.pdf)

File Format: PDF/Adobe Acrobat - [Quick View](#)

SEDIMENTS VERSUS ATMOSPHERIC INPUTS AS DRIVERS OF **POP** ACCUMULATION IN AQUATIC ..... **persistent organic pollutants** by phytoplankton and bacteria is a passive ... where  $k_u$  is the diffusive uptake rate (m<sup>3</sup> kg<sup>-1</sup> d<sup>-1</sup>),  $k_d$  is the diffusive ..... Since it improves the **agreement** with experimental data, the estimations ...

[Cev-Tek Ltd Sti](#) +1

[www.cevtek.com.tr/Tecora\\_imision\\_eng.html](http://www.cevtek.com.tr/Tecora_imision_eng.html) - [Cached](#)

Micropollutants high volume sampler. ECHO HiVol. ECHO HiVol is a "stand alone" ... LVS PM10 2.3 m<sup>3</sup>/h, and US EPA 40 CFR part 50 for PM10 and PM2.5 at 1m<sup>3</sup>/h. .... High Volume sampling Methods for **Persistent Organic Pollutants "POPs"** ...

[PDF] [Characterization of Polymer-Coated Glass as a Passive Air Sampler ...](#) +1

[research.rem.sfu.ca/.../Characterisation%20of%20Polymer-Coated%20Glass...](http://research.rem.sfu.ca/.../Characterisation%20of%20Polymer-Coated%20Glass...)

File Format: PDF/Adobe Acrobat - [Quick View](#)

Research on **persistent organic pollutants (POPs)** would ... Spatial **mapping** studies could be on a range of ..... ranges from ~1 m<sup>3</sup> for PCB 18 to almost 200 m<sup>3</sup> for PCB 153. ... This is in good **agreement** with findings in Wilcockson ...

[PDF] [0700630\\_PAGES INTERIEURES cd rom avec annexe.qxp](#) +1

[www.popstoolkit.com/UserFiles/File/SOPs/Air/Guidance.pdf](http://www.popstoolkit.com/UserFiles/File/SOPs/Air/Guidance.pdf)

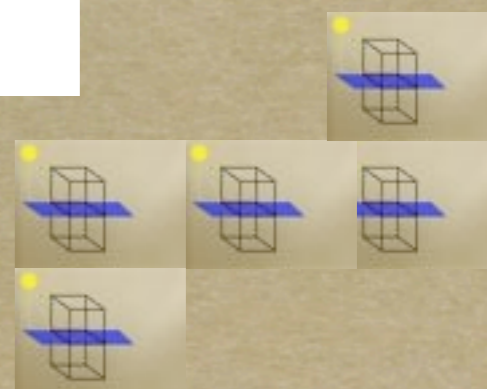
File Format: PDF/Adobe Acrobat - [View as HTML](#)

The Stockholm Convention on **Persistent Organic Pollutants (POPs)** (UNEP, .....)

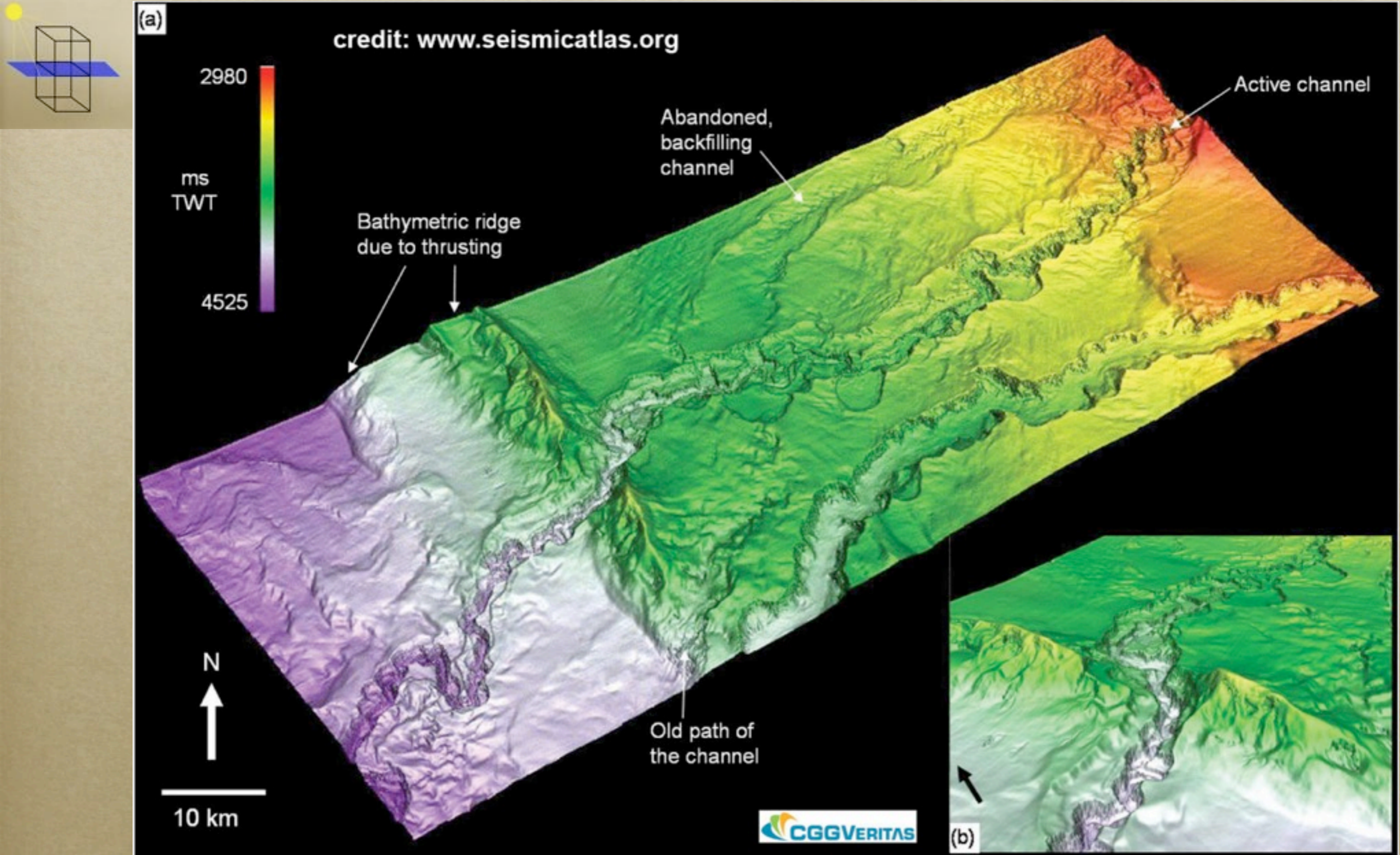


*Persistent Organic Pollutants Treaty*

*1m<sup>3</sup>:10km<sup>3</sup>x2=GSTM:stacked cubes.*



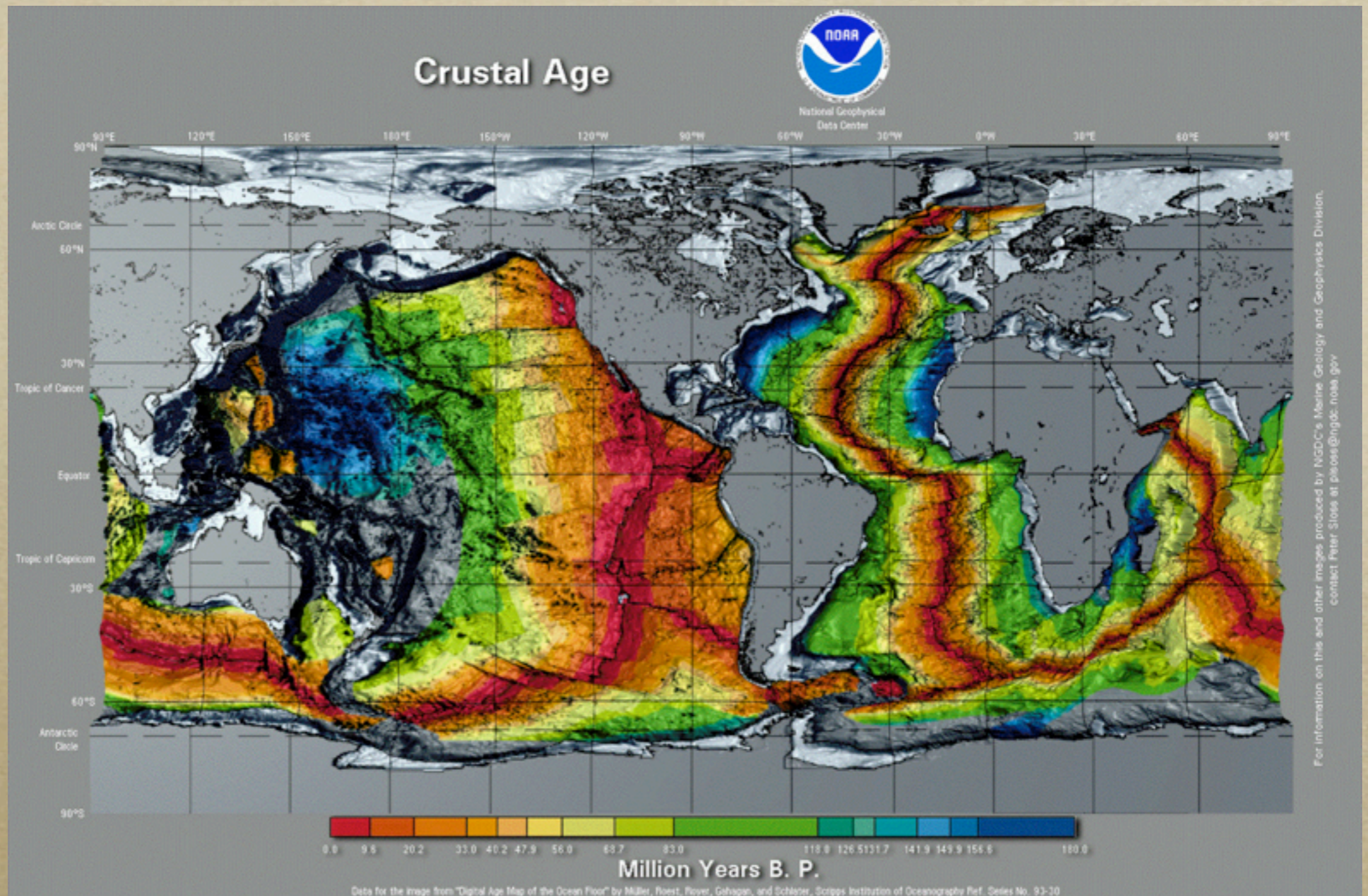
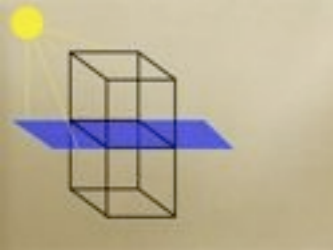




*GSTM helps visualize the depths of the sea spatially.*

<http://clasticdetritus.files.wordpress.com/2008/09/sfs302.jpg>

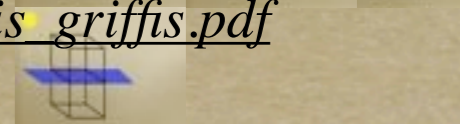
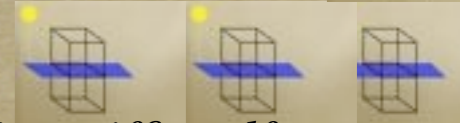




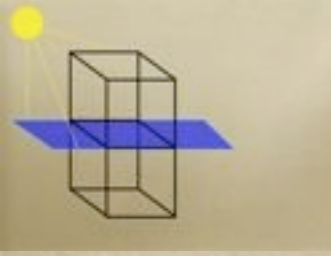
*GSTM map deep sea crust and biodiversity under the Convention on Biodiversity and Law of the Sea or UNCLOS.*

[http://www.tos.org/oceanography/issues/issue\\_archive/issue\\_pdfs/9\\_1/9.1\\_kraniotis\\_griffis.pdf](http://www.tos.org/oceanography/issues/issue_archive/issue_pdfs/9_1/9.1_kraniotis_griffis.pdf)

<http://www.csulb.edu/~rodrigue/geog140/worldcrustalage.gif>







*GSTM map cities to save our Earth  
and use*

*GSTM as a carbon verification tool for the CBD*

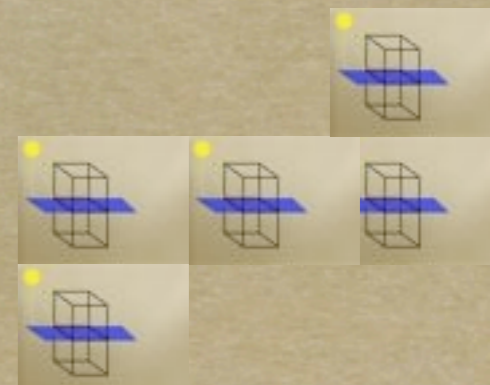
*GSTM map local plants by school children.*

*Convention on Biodiversity:*

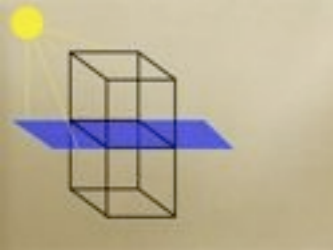
*Global Strategy for Plant Conservation 2011-2020*

*and CCD Convention to Combat Desertification*

*C40 Large Cities and Climate Leadership Group and the Clinton Carbon Positive Program*





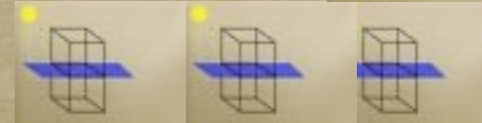


# GSTM Map Cities to map global carbon and food.

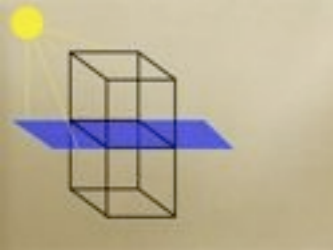
“UN-HABITAT's Sustainable Cities Program and a project known as Localizing Agenda 21, help cities get the most out of their vital role in social and economic development by promoting better environmental policies and programs, aimed at reducing pollution, and improving urban environmental management.”

Localizing Agenda 21 can be done by using GSTM to map food, carbon in the soil, air, biodiversity.

<http://c40citieslive.squarespace.com/storage/CCI%20C40%20merger%20announcement%20press%20release%20April%202014%202011.pdf>







# *GSTM map food to feed ten billion people, working to freeze the footprint of food.*

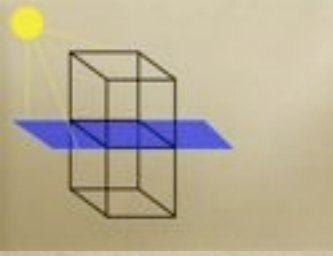
”The single largest human impact on our finite planet comes from producing food. By 2050, there will be 2 billion to 3 billion more people on Earth with three times more per capita income, consuming twice as much as now. About 70% will live in cities — more than are alive today. By 2050, we may need three Earths to meet the demands of our consumption. We urgently need to find ways to do more with less. ... Groups such as the Global Harvest Initiative (<http://www.globalharvestinitiative.org>) and the Sustainable Agriculture Initiative (<http://www.saiplatform.org>) are working to freeze the footprint of food.

It is a daunting challenge. An estimated 70% of the land that is suitable for growing food is already in use or under some form of protection.” Read on ‘food’ article suggests eight wedges to aid in freezing the food footprint: genetics, better practices, efficiency through technology, degraded land ecological restoration, property rights and small landholders, waste, consumption, carbon thus map soil carbon  $1\text{m}^3:10\text{km}^3 \times 2$  : “Soil carbon — or organic matter — is key to conserving farmland for future generations. Indeed, the single best measure of rehabilitated soil is increasing organic matter from less than 0.5% to 2% or more. However, half of the world's top soil, in which most soil carbon resides, has been lost in the past 150 years.”

<http://www.nature.com/nature/journal/v475/n7356/full/475287a.html>







# *Carbon footprint in urban greening*



The team, led by Zoe Davies at the University of Kent in Canterbury, UK, recommends improved monitoring and management of urban vegetation to maximize its contribution to mitigating greenhouse-gas emissions.






GSTM K12 narrative about the journey of the self at geocoded spatial transparent metric scale, a unique history and geography.



*GSTM can facilitate virtual and visual memory and the ethical debate can be held transparently about what can be seen in metadata sets or remembered as it is seen through an “older GSTM” shot....*







## GSTM map plant cover and soil at 1m<sup>3</sup> within

10km<sup>3</sup>x2 “Drylands cover about 40% of the Earth’s land surface, excluding Antarctica and Greenland, and are home to more than two billion people (WRI 2002). They are susceptible to desertification, land degradation and drought (DLDD) and their populations, agriculture and ecosystems are vulnerable to climate change and variability. The United Nations Convention to Combat Desertification (UNCCD), one of the three ‘Rio’ conventions born out of the 1992 United Nations Conference on Environment and Development (UNCED), aims to address these issues and emphasizes action to promote sustainable development at the community level.

The other Rio conventions are the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD). The areas of interest of the three Conventions are closely linked and each has accepted the need to work in concert. One area of joint interest is that of the uptake of carbon dioxide from the atmosphere by plants and its storage in ecosystems. It is perhaps the only practicable way of removing carbon dioxide from the atmosphere in the short term and therefore one of the few options for addressing its existing carbon load, as distinct to slowing future loading by reducing current and future emissions. Most attention so far has focussed on carbon sequestration by tropical forests. More recently, some have argued for a more holistic approach to terrestrial carbon (The Terrestrial Carbon Group, 2008).”

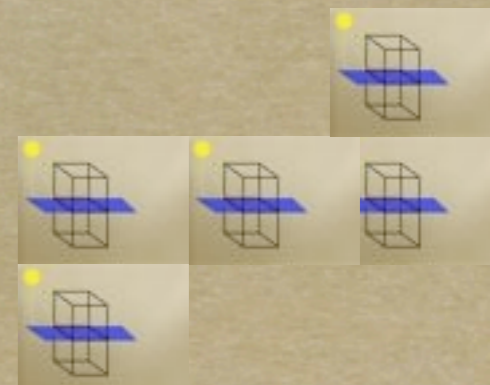







If efforts are made at all levels to fully implement this updated CBD Global Plant Strategy:

- societies around the world will be able to continue to rely upon plants for ecosystem goods and services, including food, medicines, clean water, climate amelioration, rich, productive landscapes, energy sources, and a healthy atmosphere;
- humanity will secure the ability to fully utilize the potential of plants to mitigate and adapt to climate change recognizing the role of plant diversity in maintaining the resilience of ecosystems;
- the risk of plant extinctions because of human activities will be greatly diminished, and the genetic diversity of plants safeguarded;
- the rich evolutionary legacy of plant diversity will be used sustainably and benefits arising are shared equitably to solve pressing problems, support livelihoods and improve human well-being;
- the knowledge, innovations and practices of indigenous and local human communities that depend on plant diversity will be recognized, respected, preserved and maintained; and
- people everywhere will be aware of the urgency of plant conservation and will understand that plants support their lives and that everyone has a role to play in plant conservation.” <http://www.cbd.int/gspc/intro.shtml>







Need for global seamless and transparent metric to monitor plants and global carbon, the Geocoded Spatial Transparent Metric is suggested for adoption in Rio20-June 2012. Utility of GSTM:

CBD “...*Invites* the World Conservation Monitoring Center of the United Nations Environment Program to support the Executive Secretary in monitoring implementation of the Strategy, working in collaboration with the Global Partnership for Plant Conservation; 6. *Encourages* Parties to nominate focal points for the Strategy, or designate from among existing focal points, in order to:

(a) Promote and facilitate implementation and monitoring of the Strategy at national level, including the identification of national targets and their integration in national biodiversity strategies and action plans and sectoral and cross-sectoral plans program and activities;

(b) Promote the participation of national stakeholders in the implementation and monitoring of the Strategy at national level; and

(c) Facilitate communication between national stakeholders and the Secretariat and Global Partnership for Plant Conservation;.....8. In particular, the following targets should be integrated:

(a) Target 1 into the Global Taxonomy Initiative;

(b) Targets 4 and 5, 7 and 8 into the program of work on protected areas;

(c) Target 10 into work on invasive alien species;

(d) Targets 11, 12 and 13 in the work on sustainable use [www.cbd.int](http://www.cbd.int)

(e) Targets 9 and 13 into work on Article 8(j) and related provisions;

(f) Target 14 into the program for communication, education and public awareness; and

(g) Targets 6, 9 and 12 into the thematic program for agricultural biodiversity and forest biodiversity...”

<http://www.cbd.int/decision/cop/?id=7747>

**Global Carbon Verification Tool: Geocoded Spatial Transparent Metric**

GSTM 10km<sup>3</sup>x2:1m<sup>3</sup>

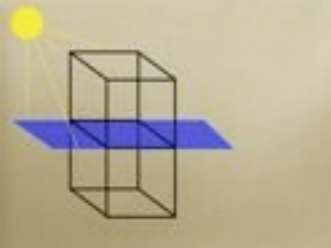
One meter cubed graticule scale for plants and soil carbon.

**COP 7 Decision VII/10: Global Strategy for Plant Conservation**

[http://www.bgci.org/index.php?option=com\\_news&id=0772&print=1](http://www.bgci.org/index.php?option=com_news&id=0772&print=1)







Outlier or anomaly in early warning ---- in our human thinking type--- verbal, word making sounds and narrative content make paths and words play at naming the game. Yet sometimes we do not see the 'gorilla in the room'. Can the individual help see the unexpected?

Geocoded Spatial Transparent Metric scale of ten kilometer cube stacked might allow us to “resee” our local neighborhood. Using GSTM we might make sense of climate change, metadata, in particular, local dark metadata: things we like to deny, forget, or are incapable of thinking about.

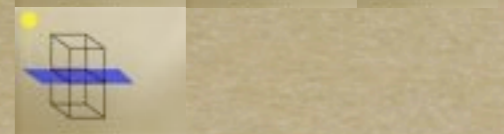
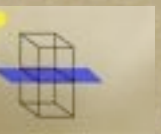
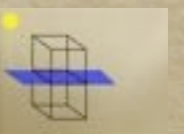
NAS 2006

The Geocoded Spatial Transparent Metric - GSTM - at ten kilometers stacked cube scale can increase our understanding of scale issues.

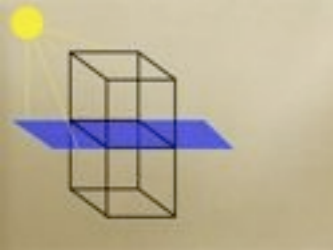
GSTM Game Changer: scalable emergent network, Augmented Reality (AR) and Virtual Reality (VR).

$10\text{km}^3 \times 2 : 1\text{m}^3$

[http://www.nap.edu/openbook.php?record\\_id=11019&page=237](http://www.nap.edu/openbook.php?record_id=11019&page=237)







# GSTM POEM

*Homo sapiens visual, social, verbal, small group,  
predictable proximity seeking times: ecoplay:  
survivor behavior. We forget history. Do not do  
future planning. Deny well. Homo sapiens visual,  
social, verbal, small group, predictable proximity  
seeking times: ecoplay: survivor behavior. We  
forget history. Do not do future planning. Deny  
well. Homo sapiens visual, social, verbal, small  
group, predictable proximity seeking times:  
ecoplay: survivor behavior. We forget history. Do  
not do future planning. Deny well.*

*Ha, ha, ha.....*

*Homo sapiens visual, social, verbal, small group,  
predictable proximity seeking times: ecoplay:  
survivor behavior. We forget history. Do not do  
future planning. Deny well. Homo sapiens visual,  
social, verbal, small group, predictable proximity  
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*Homo sapiens visual, social, verbal, small group,  
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