

A GEO White paper

(Draft Date: Oct 1, 2013)



**Global Spatial Reference Frame (GSRF)
for GEOSS and Spatial Big Data**

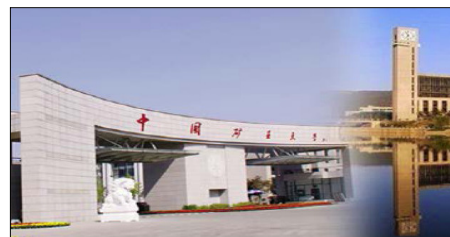
Task IN-02/C1

WP 2012-2015



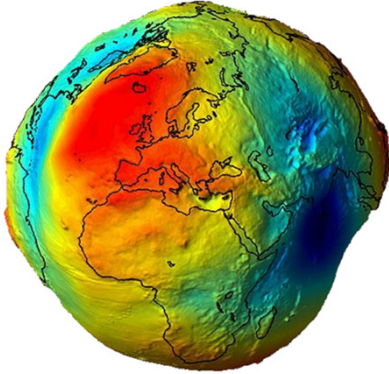
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Big Data on Planet Earth



Integrated Earth Observations is bringing with big data, which increases sharply in resolution, variety and volume.

- **Data volume**

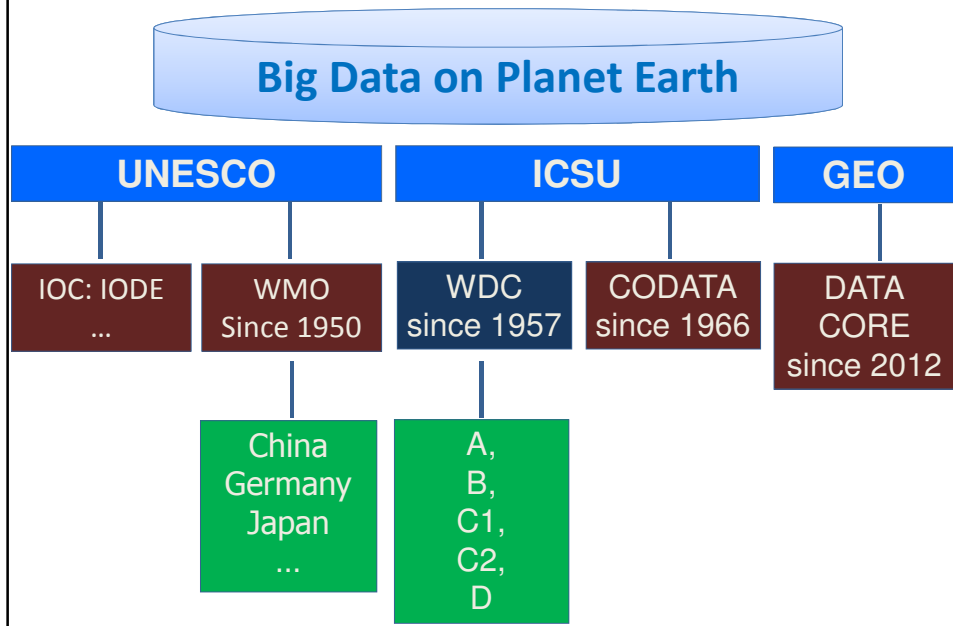
1.2 zetabyte/year, 80% is spatial data

- **NASA:**

Now stored: 5 petabytes

Be increasing: 4.5 terabytes per day

Int. Works on Data Share



Observations

GEOSS: Data Sets

Gap

Users: Scientific, Public

Big Data Brings with Big Gaps

- Map projections
- Euclidean spheroids
- Surface grid
- Spheroid grid

Spatial Reference Frame(SRF)
Coordinate System, Space Datum

Data Granularity/Resolution

Data Structure

Data Standard

Metadata

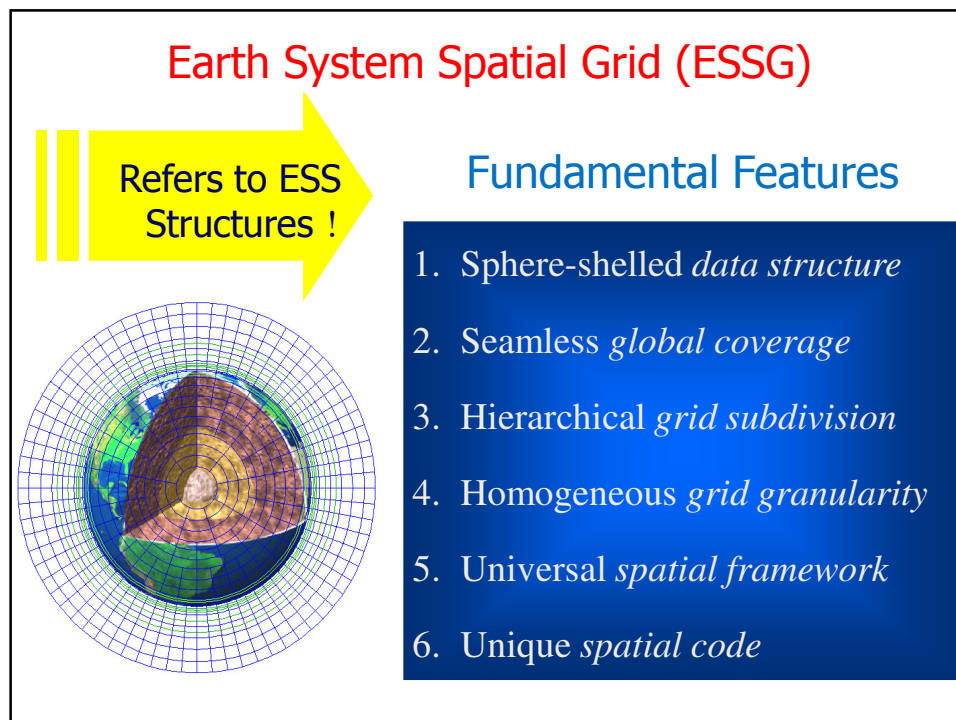
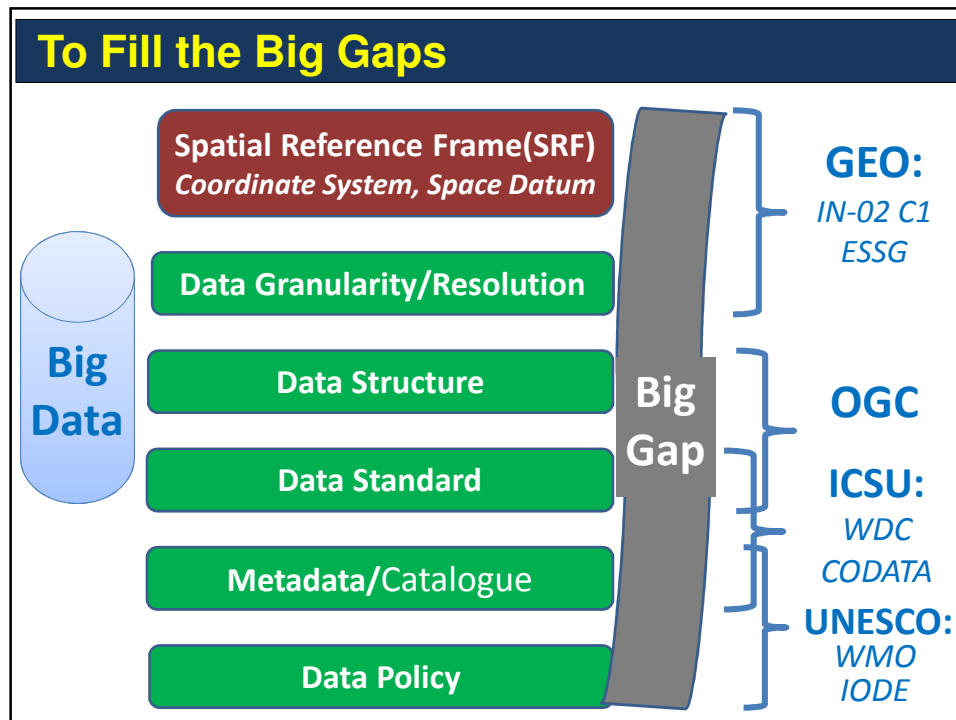
Data Policy

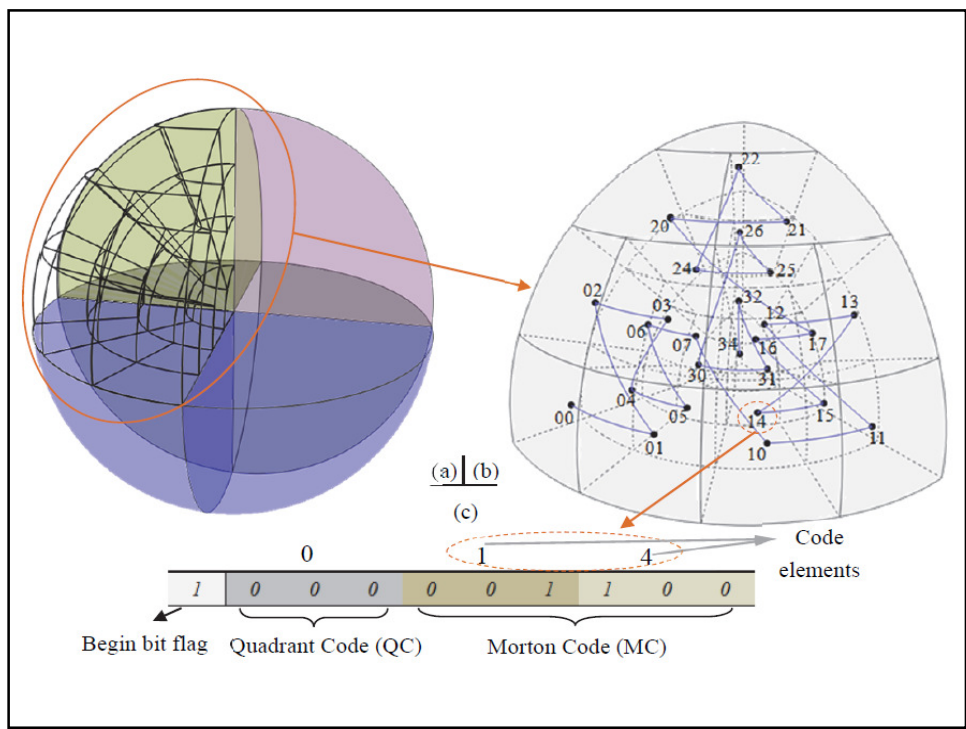
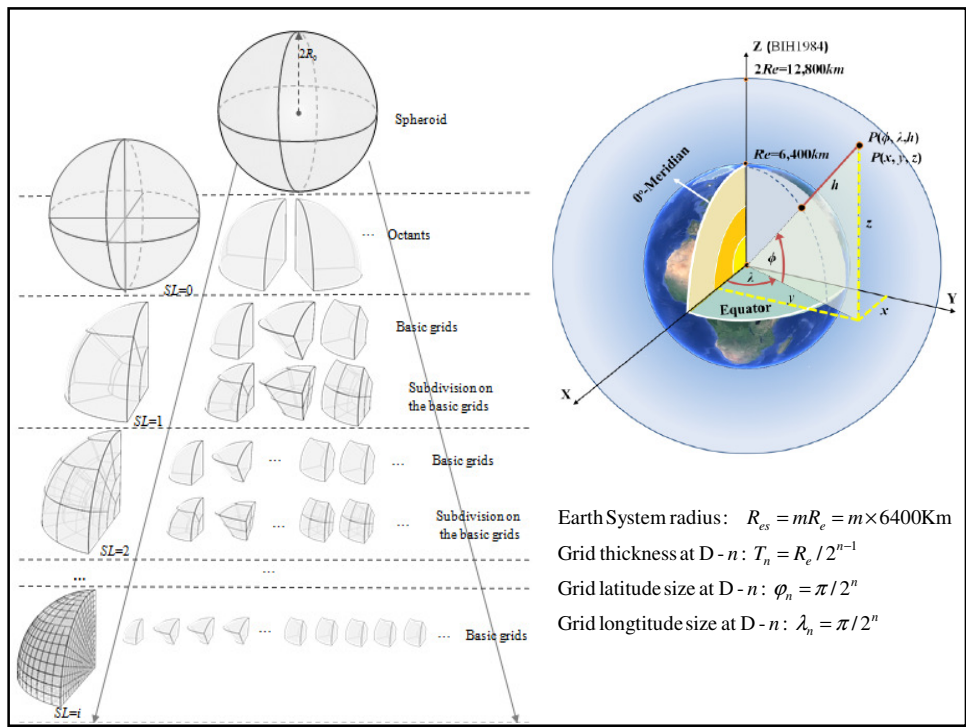
Data Sets:
difficult in
spatial
interrelation

Data/User:
difficult in
data access
& application

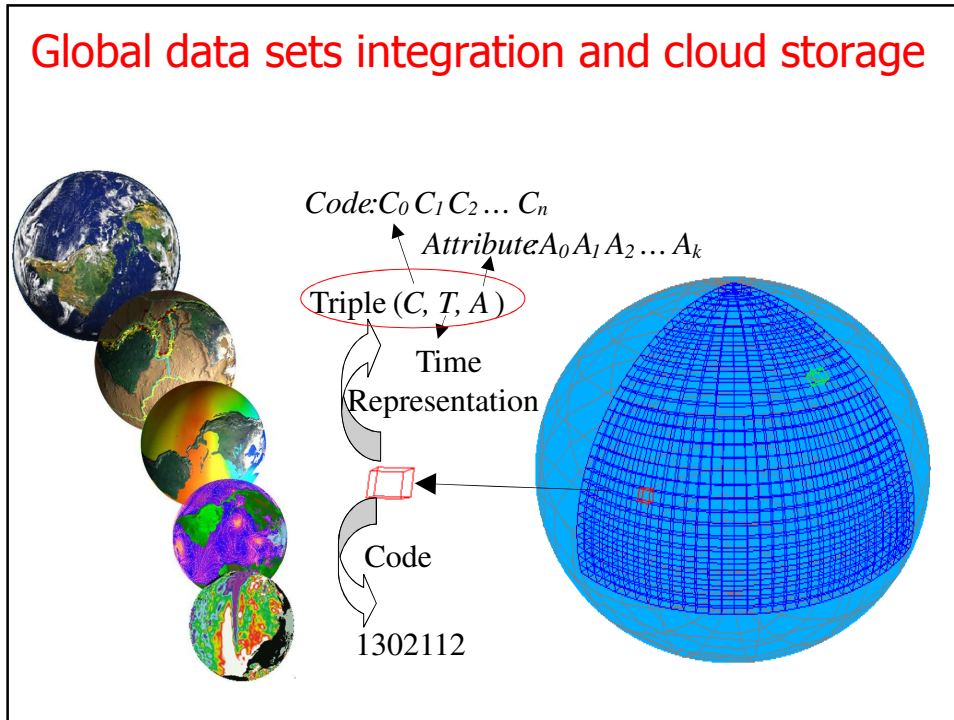
Big
Gap

Big
Data

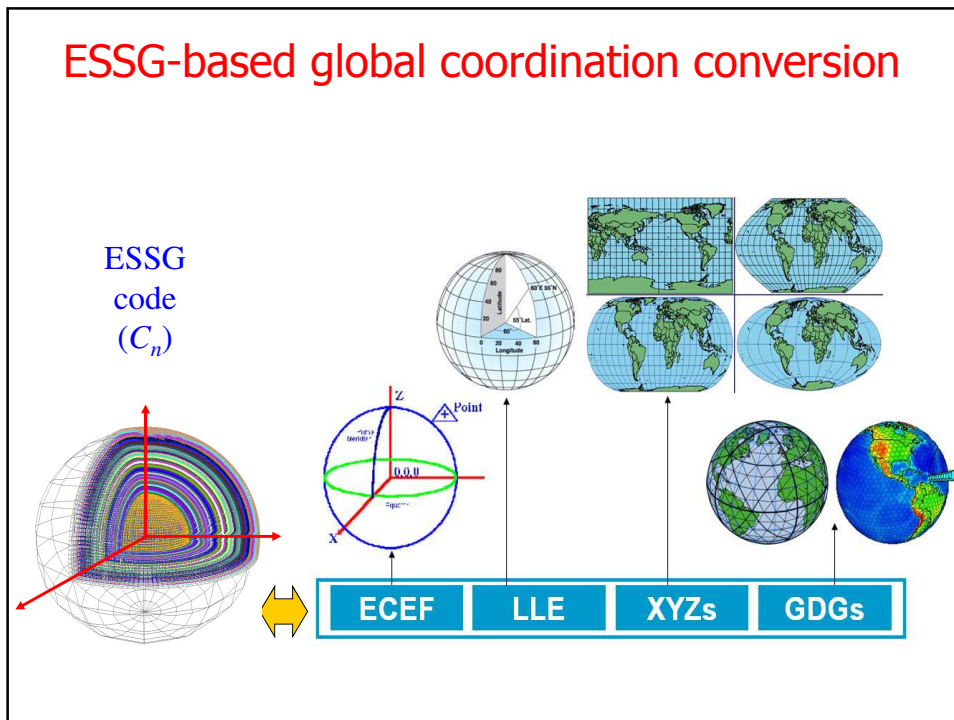


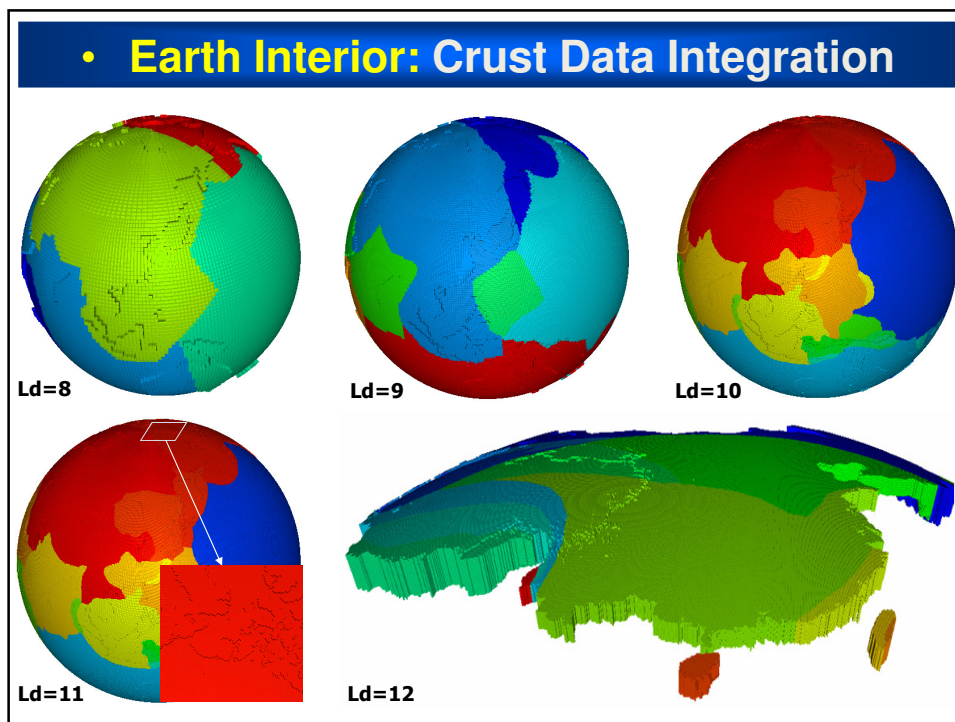
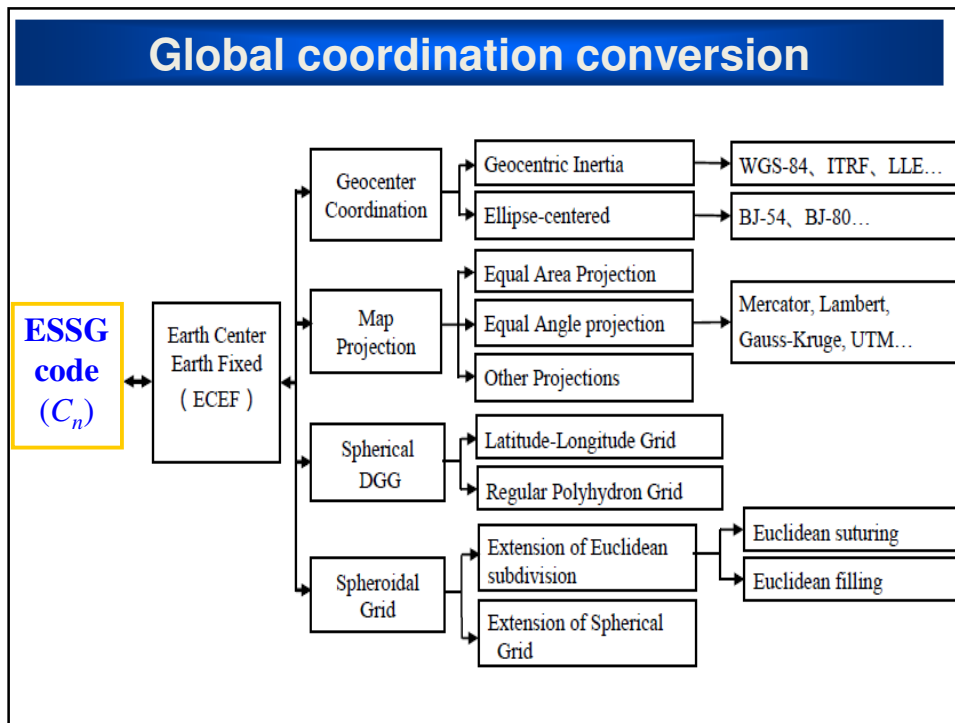


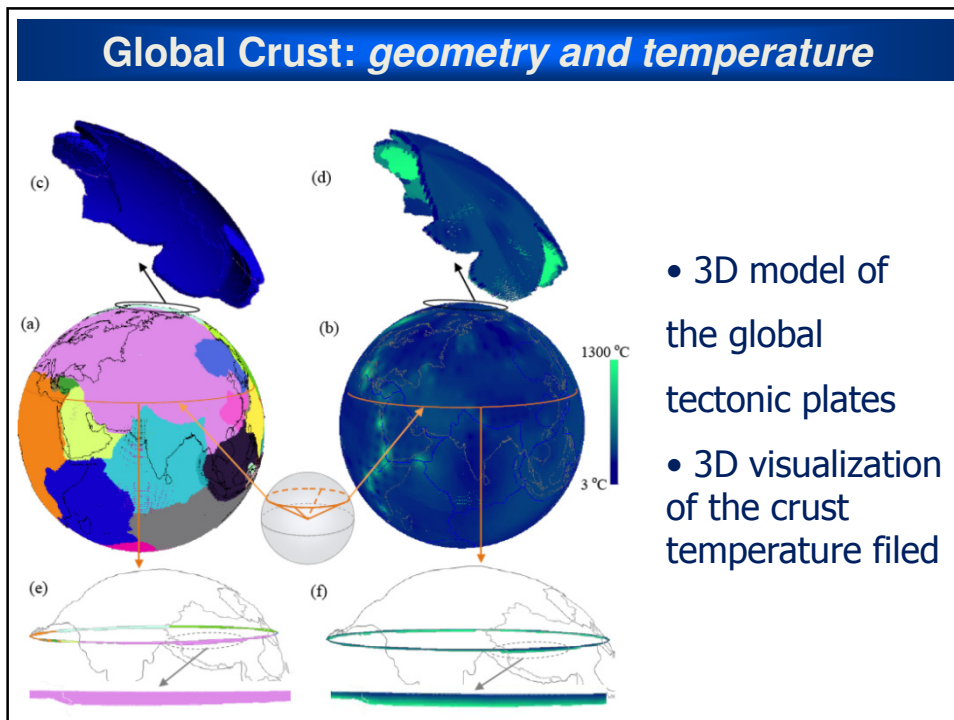
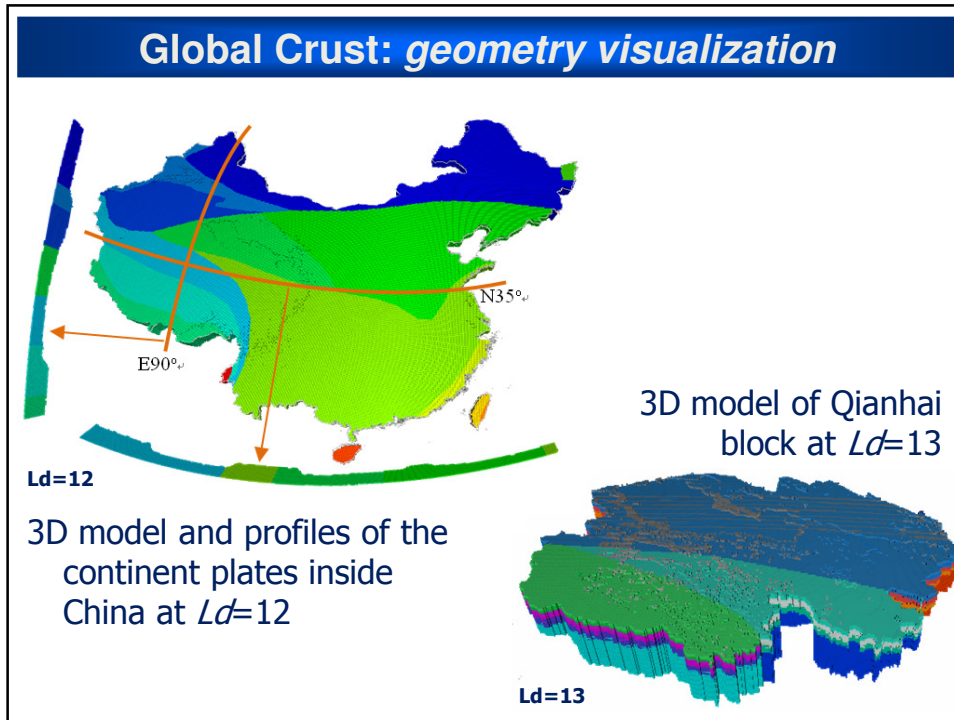
Global data sets integration and cloud storage

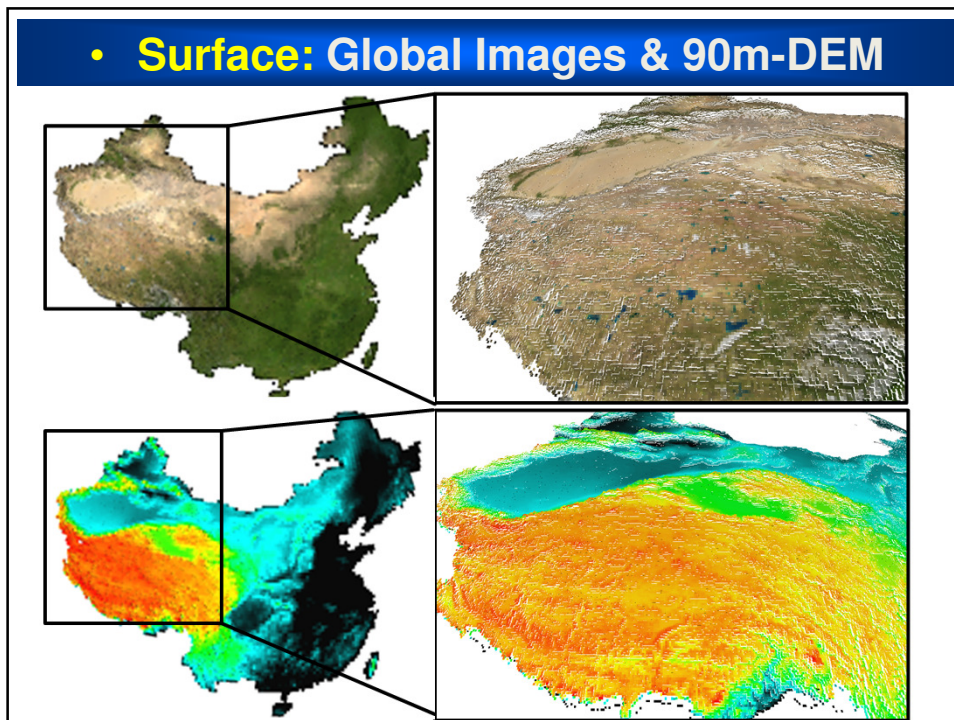
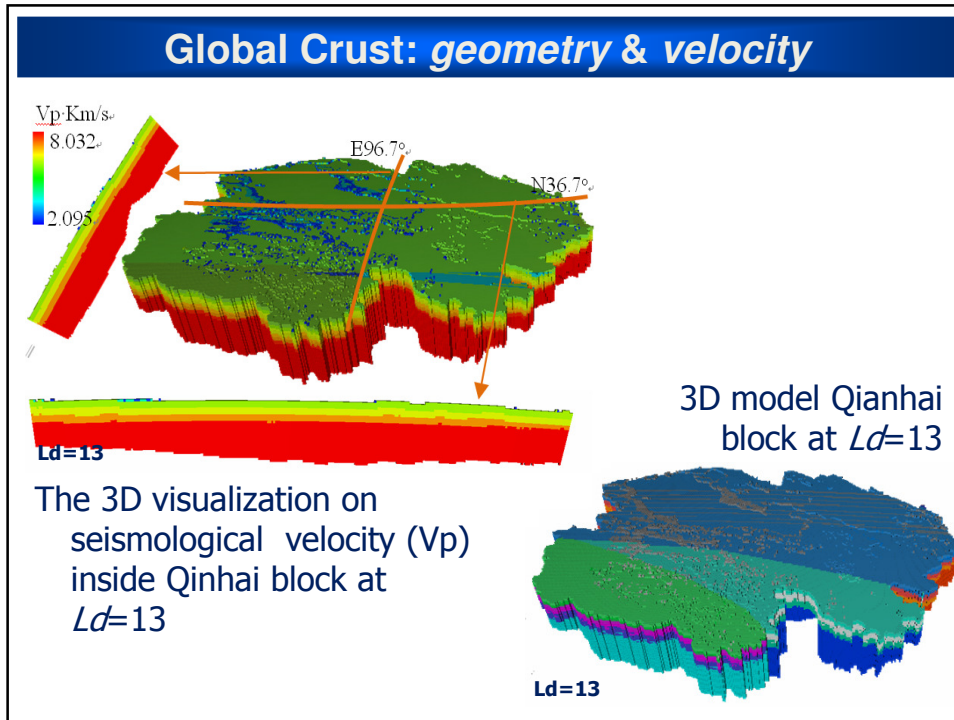


ESSG-based global coordination conversion

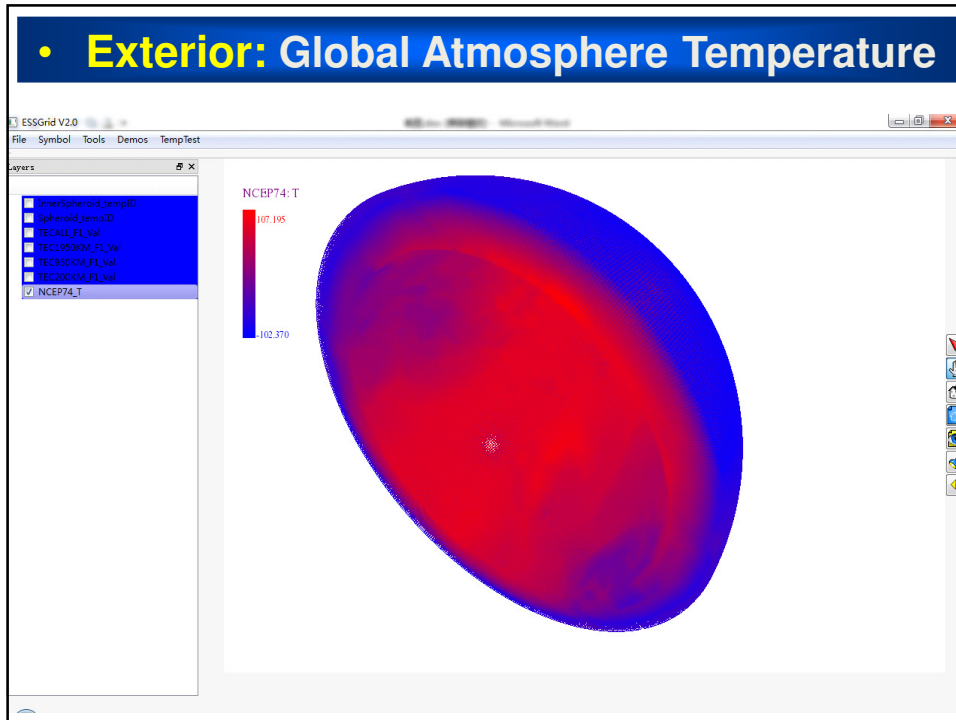




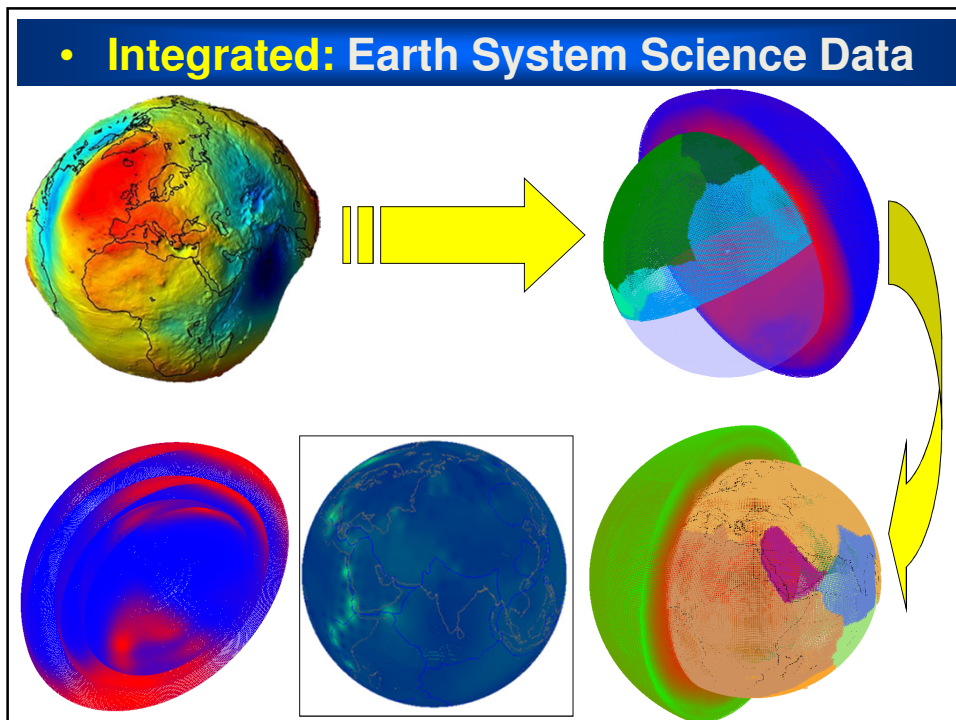




• Exterior: Global Atmosphere Temperature



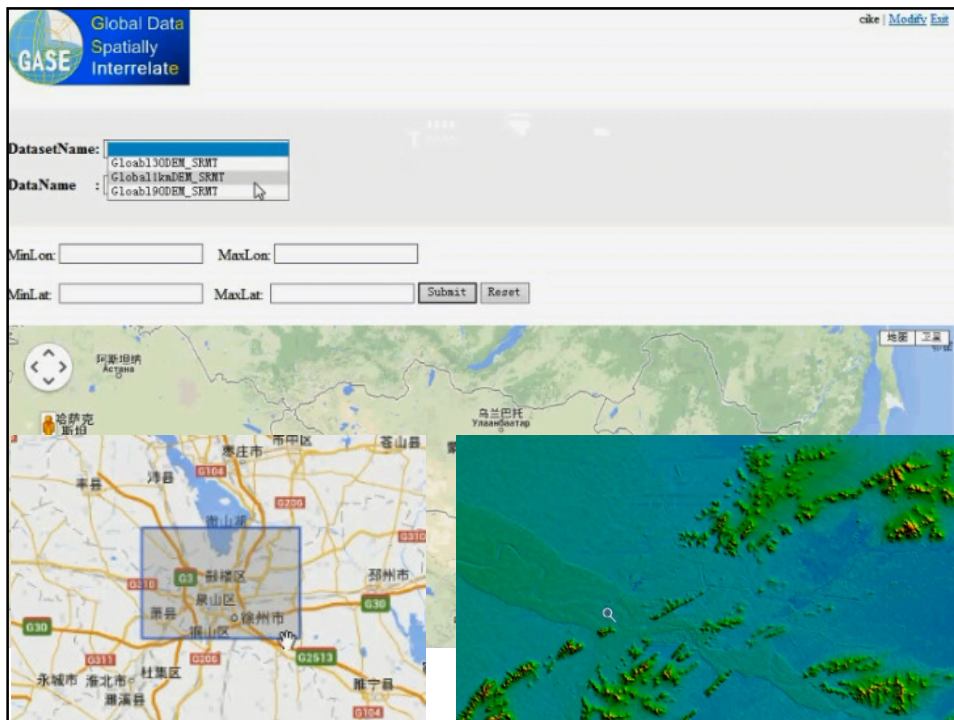
• Integrated: Earth System Science Data


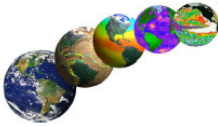




Global Data Spatially Interrelate

<http://ip.neiwangtong.com:10008/>



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