

# **Earth Science Subcommittee**

## **Draft Report from October 28-29, 2015**

### **Steven Running, Chair**

**This ESS meeting focused on modeling, particularly Earth Systems modeling, as per the 2<sup>nd</sup> slide. Reports given by key large scale modeling groups and centers.**

**Earth systems modeling based on global observations (atmosphere, oceans, land, ice) is a unique NASA capability, no other U.S science agency produces global satellite based datasets for this modeling.**

**The last 15 years ESD has deployed an unprecedented constellation of Earth observing satellites, and the data processing/archiving/distribution system to exploit the science**



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- FINDING: New international agreement with the EU and ESA for full data sharing from new European satellites major step forward
- FINDING: Earth System Modeling “Summit” of ESD US government teams in Feb 2015 positive first step in coordinating model development, global dataset production, validation activities. This coordinating activity should continue and be expanded.

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- **RECOMMENDATION:**

NASA could expand its contribution to the nation's operational weather prediction services, (which are provided by NOAA). NASA has been contributing by accelerating the incorporation of new data types, especially satellite derived, into forecast initialization. (Joint Satellite Data Assimilation Center, SPORT, near real time GPM, scatterometer data).

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- RECOMMENDATION:

ESD could better coordinate the land modeling activities amongst the teams improving both the science and work efficiency. Common model components, initializing datasets, and validation procedures could be shared effectively.

\* Finding: We found the NEX system to be an innovative idea for improving modeling efficiency

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- **RECOMMENDATION:**

ESD could spearhead a new type of global carbon model to exploit multiple ESD global datasets more completely. This model could ingest carbon relevant satellite, atmospheric, ocean and vegetation data at multiple spatial and temporal scales to study carbon-climate interactions and improve climate change projections.

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- **FINDING:**

The 2-step proposal review system has been used in ESD periodically for many years for certain competitions. The ESS finds that giving the program managers the option to use this review system when appropriate retains optimum flexibility.

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- **RECOMMENDATION:**

We suggest ESD challenge Earth system modeling teams to clearly prioritize and optimize their needs for future increased computer power, beyond only increasing spatial resolution.

Different groups develop plans on how they will best utilize advancements in computing power.



# Earth System Data Components for Models

