

Sensor Web Q&A – Meemong Lee / Jet Propulsion laboratory

1) What is a sensor web?

A sensor web is a coordinated observation infrastructure employing multiple sensors that are distributed on one or more platforms. The sensors and platforms may be of same type (homogeneous sensor web) or of different type (heterogeneous sensor web). The number and type of sensors and the platform distribution in time and space are optimized to answer specific science questions.

A network of mountain top weather stations is an example of a simple sensor web. A more sophisticated sensor web would integrate space-based and sub-orbital measurement assets in a coordinated design. An even greater benefit could be realized if near real-time measurement analysis fed back into the sensor web control system to dynamically optimize the observation strategy.

2) What factors or features distinguish a sensor web from data collection scenarios in use today?

The data collection scenarios in use today is sensor-specific or mission specific. We are only now beginning to explore the impact of using multiple, complementary measurements of the same geophysical quantity from a single platform on the science knowledge (eg. combining ozone data from the TES and OMI instruments aboard EOS-Aura)

The unique features that a sensor web provides include

- *inter-sensor coordination*
- *inter-mission coordination*

3) What is the scope of a sensor web?

The scope of a sensor web includes

- *multi-mission/multi-sensor coordination*
- *multi-sensor-based observation planning*
- *multi-sensor -based data product generation*

The scope applies to on-going missions as well as to planning future missions.

4) What are the components or elements of a sensor web?

The main components of a sensor web include

- *sensors*
- *platforms*
- *coordination infrastructure*
- *observation planner*
- *data product integrator*
- *science evaluator*

5) What other systems might interact with the sensor web?

The sensor web interacts with

- *Observation planning system of individual sensors*
- *data archive system of individual sensors*
- *Phenomena modeling and simulation systems*

6) What is the benefit of a sensor web approach? Where or how would it be used?

The complex and dynamic nature of the Earth phenomena requires spatial, spectral, and temporal coverage that is far beyond any mission. A sensor web approach facilitates maximal use of existing assets as well as coordinated planning for future assets toward the ultimate Earth science program objectives.

A sensor web can be used in:

- Integrated observation planning*
- Integrated science product generation*
- New sensor technology validation*
- New mission concept validation*