



Thoughts for NASA Transition Team on NASA Earth Science

Introduction. Science Applications International Corporation (SAIC) is a large, publicly held company with more than \$10B/year in annual revenues, primarily generated from federal government contracting. As one of the largest suppliers of support services to NASA, SAIC is heavily involved with human space flight, Earth science, space science, IT, and aeronautics. SAIC is one of NASA's premier "honest brokers" in that it is not a provider of flight hardware and therefore can be relied upon to provide honest, unbiased advice and counsel on the agency's most difficult problems. SAIC's Earth science support is centered primarily at Goddard Space Flight Center and involves research, data systems engineering and development, atmospheric and oceanographic modeling, and data assimilation. GSFC has led many of NASA's most successful Earth science missions and SAIC has been involved through the life cycle from preflight instrument calibration through application of the observations in weather and climate models.

Relevance and Value of NASA's Earth Science Mission. NASA has a critical role to play in the success of President-elect Obama's agenda. The application of remotely sensed data, directly or through modeling and decision support will be essential in many areas, including:

- International relations. American leadership is needed on the issue of climate change. As negotiations begin on the successor to the Kyoto Accord, NASA's remote sensing assets will enable verification of treaty compliance. NASA's modeling capability will provide a sound scientific basis for estimating the impact of any negotiated changes in greenhouse gas reductions.
- Education. For 50 years, NASA has inspired children to study science and engineering. Beyond inspiration, NASA provides funding of research grants to study some of the country's most difficult problems. Expansion of educational opportunities in science, technology, engineering, and mathematics (STEM) can increase the pipeline of scientists needed to understand the entire Earth system and improve the nation's global competitiveness.
- Economic development. Climate change will be a pervasive issue in virtually all industries. Companies are making decisions about major capital investments that will be impacted by climatological conditions 50 years from now without sufficient information. NASA is the leading climate research organization in the country and one of the world leaders. It must continue to push the state-of-the-art to support near- and long-term decision making.
- National Security. Changes in availability of resources (water, food, land) will exacerbate tensions between countries. NASA's remote sensing capabilities and climate science are vital to keep our nation informed and assess the impact of these changes on our foreign commitments.

What Works. NASA is the undisputed world leader in Earth observation. It is also a world leader in the advancement of scientific research. Its space based assets have allowed major advancements in the understanding of the Earth system.

What Could NASA Do Better? Emphasis must be placed on the application of modeling and decision support to maximize the value of remotely sensed data collected by NASA. The leap from observation to actionable information is beyond the means of most decision makers. NASA has a role to play in advancing the state of the art in forecasting near term (1 year) to long term (50 years) impacts of climate change. Better forecasts and decision tools will allow American businesses make more informed decisions about where to locate factories and power plants; help city managers make more informed decisions about developing coastal areas; help states more accurately forecast available water resources; and help farmers proactively account for potential droughts. These are just a few examples of the untapped economic value of expanding NASA's research in climate change models.

Summary. NASA's Earth science mission is directly relevant to current and future generations of Americans. Weather affects one third of America's GDP. Climate is likely to affect an even greater percentage.