Applications Panel

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What are Applications?

- I greatly appreciated the discussion yesterday on the definition of applications and operations.
- There are many applications of earth observing data, most of them are not operational.
- However, the measurable societal benefits of operational uses of earth observations outweigh that of science uses overwhelmingly.
- If earth observing applications are to be adopted for operational decision making, then there must be continuity of the data.
- And the data/products must be accessible.

The Fundamentals

- We keep making more people.
- But the earth is finite.
- Therefore, demand for information about the earth and its atmosphere will continue to increase exponentially.



My Experience

- My career has been devoted to applying earth observing measurements and GIS to solving societal problems.
- My husband and I founded a company that used GIS to add value to earth observing data.
- Our projects and tools were built for federal, state, and local governments, private corporations, and NGOs across a wide variety of applications.
- The company grew exponentially and we sold it to an aerospace company 12 years later.
- More people, not more earth = continual increase in the value of information about the earth.

Example: Fireline



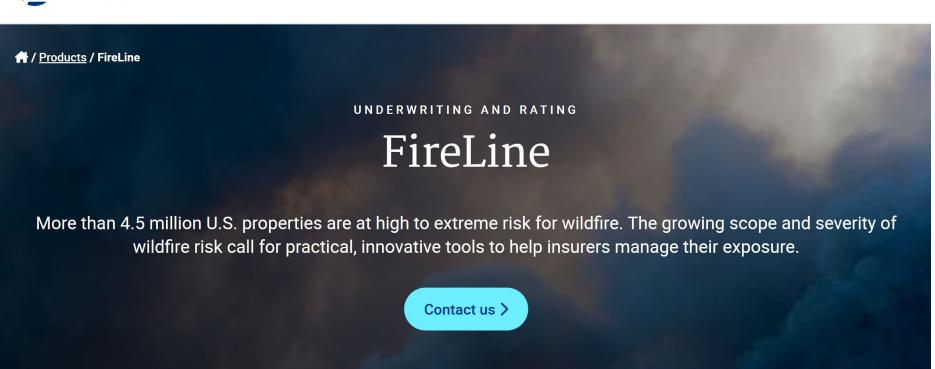




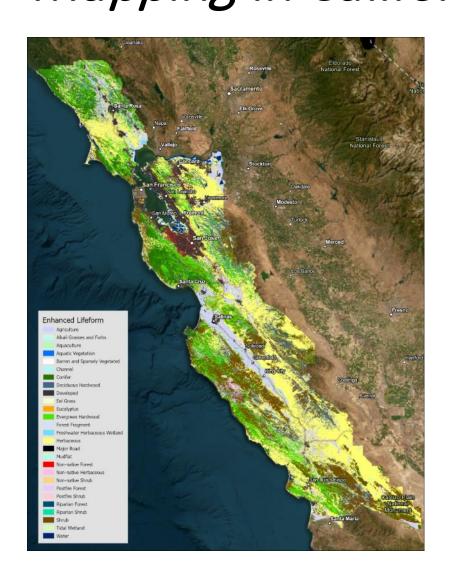




Our Focus > Company >



Example: Fine Scale Vegetation & Fuels Mapping in California





- 1/4 to 1/2-acre minimum mapping unit
- Over 150 classes of vegetation
- Earth observing inputs

 field data, NAIP,
 Landsat, Sentinel,
 AVIRIS hyperspectral,
 GEDI, airborne lidar derivatives
- Applications = wildfire risk assessment, wildlife management, disaster response, flood risk assessment, etc.
- Users include governments, NGOs, private companies, etc.

What Drives the Demand for Continuous Earth Observation Applications?

- Its not because somebody believes that the technology is cool or interesting science.
- Applications demand is solution driven
 - What is the pain?
 - Is there a solution?
 - Can we reliably offer hope?
- Successful offering of hope leads to *measurable societal* benefits. Funders often value measurable societal benefits over science achievements.

Panel Questions

Technology push

AND/OR

Demand Pull

The Questions are all focused on technology push, but for applications to thrive, we need a demand pull

What High Level Applications are Likely to be of the Highest Value to NASA ESD?

- Why should we be concerned with the value to *ESD* rather than the value to the application *users*?
- The biggest and most consequential applications are those that will give users hope.
- Ask the users what they are.

How Can Stakeholders be Involved in Providing both Direction and Resources to Such Applications

- Listen to them.
- Understand their pain.
- Offer them reliable hope that is faster, better, and/or cheaper than the solution they currently have without NASA observations and technology.
- For example, when we started our company in 1988, detailed forest type mapping cost \$1/acre. Using Landsat, we lowered the cost to \$.70/acre and offered a product that was faster and more consistent than that produced from manual interpretation of aerial photos. Today, almost 30 years later, that product is still \$.70/acre but it is substantially more consistent, detailed and accurate, including over 50 attributes describing the attributes of each polygon.
- Do not think that NASA is the only solution. Be aware of competition from all the new companies offering end to end solutions. Just because NASA can do it does not mean they should do it.

How Can the Applications Community be Organized to Provide Continuous Guidance to NASA ESD?

- Why does NASA think it or some central authority can or should organize the applications community?
- Why would members of the application community put resources towards this effort? They could care less about NASA, unless NASA can offer hope.
- The question should be "What can NASA do to make the applications community care about ESD measurements and products?" *How can NASA offer hope?*

How Should the Applications Community Interface with the Observation Community to Make Optimal Use of Sensors?

- Instead, "How can the Observation Community Engage with the applications Community to offer the Applications Community hope?"
- This would engage the Application Community's resources and attention.

How Should Issues be Prioritized if Funding Changes?

- What are Issues?
 - Are they investments?
 - Are they solutions?
- Priorities should be set by what offers the greatest overall society benefits over time.

AND/OR

• What offers NASA the greatest value in terms society's impression of NASA's ability to solve organizational pain.

Pain, Solution, Hope

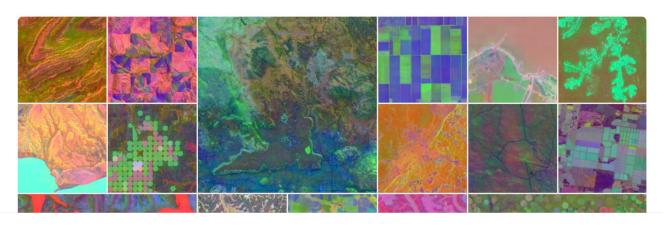
- Understand the user's pain.
- Offer easy access to reliable hope.
- Ask Google how they do it.
- Ask the Europeans how they do it.

SCIENCE

AlphaEarth Foundations helps map our planet in unprecedented detail

The AlphaEarth Foundations team

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Thank You