Special Joint Panel on the Future of the Weather Enterprise

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Weather Services — **Present Status, Trends, & Innovations**

Operational NWP by a Canadian University

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Academe's Place in the Weather Enterprise

- Educate future employees of the Enterprise
- Research the atmosphere and find new ways of **making**, **tailoring** & **delivering** weather & climate forecasts

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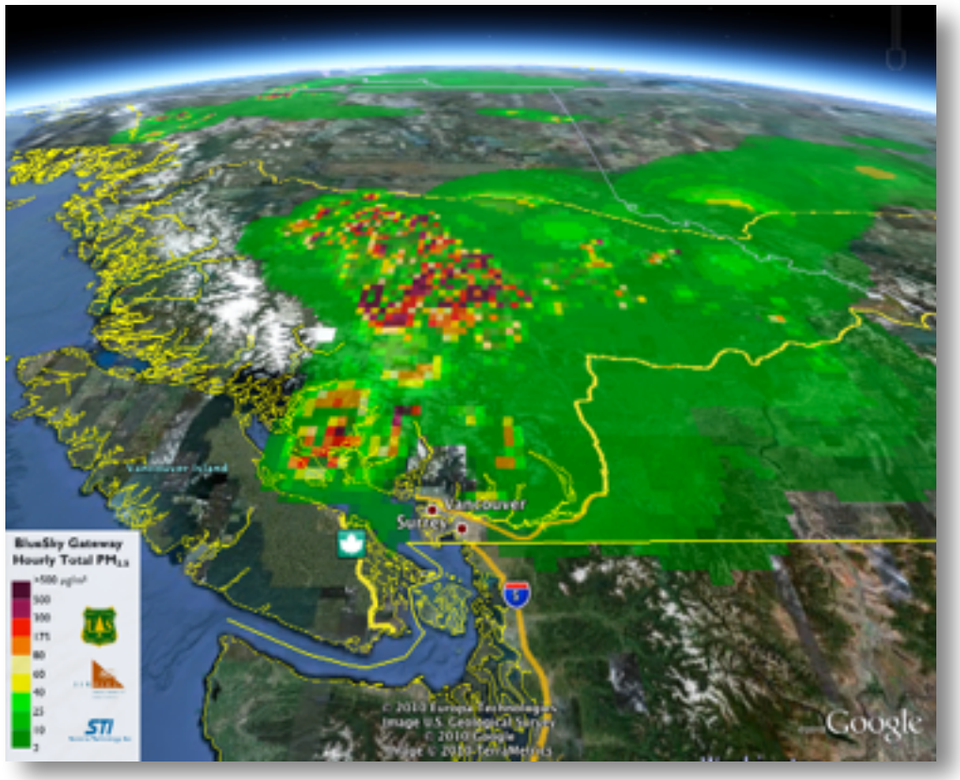
Academe's Place in the Weather Enterprise

Trends by some Universities:

- **Make** daily operational ensemble NWP forecasts
- **Tailor** NWP output to client needs
- **Deliver** products via internet
- Spin-off private companies



BlueSky forest-fire smoke forecast produced by UBC

Enablers

1. Community NWP & Climate **models**

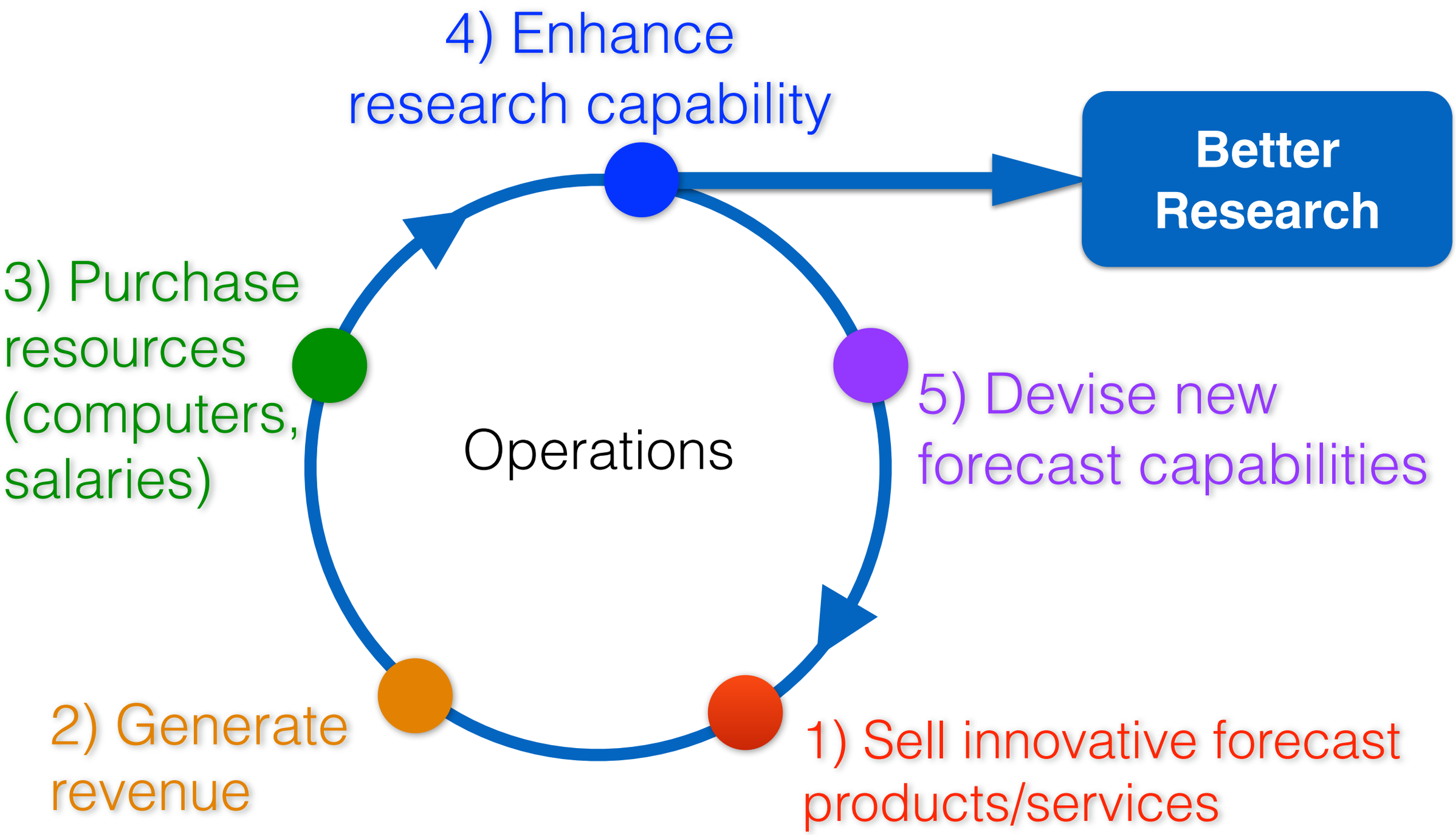
2. Initial Conditions & Boundary Conditions (**ICs/BCs**, timely & free): GFS, NAM, GEM, NAEFS

3. Inexpensive **cluster computers**

4. **Limited focus:** domains, products

photo by Roland Schigas

Why Academe Makes Operational Forecasts



Comparison of Merits of Enterprise Sectors

Legend:
G = Government
A = Academe
P = Private

	Worst, or Least, or Slowest	Medium	Best, or Most, or Fastest
Responsiveness	G	A	P
Creation of Foundation Capabilities	P	A	G
Tailoring of Display/ Product	G	A	P
Longevity	P	A	G
Innovation		P	A, G

Trends

- Humans (~~forecasters~~ → interpreters)

  Undergrad. education:

  1) meteorology to enter grad-school?

  2) less-meteorology for Enterprise?

  (computers, social networking, statistics, presentation)

Canada: scribe

Norway:

Should WMO and AMS change the meteorologist course requirements ??

- Data sharing: the cloud

- Crowd sourcing:

  1) Data input: cell phones (e.g. PressureNet);

  lightning sensors; smart electric meters

  2) Processing: distributed computation

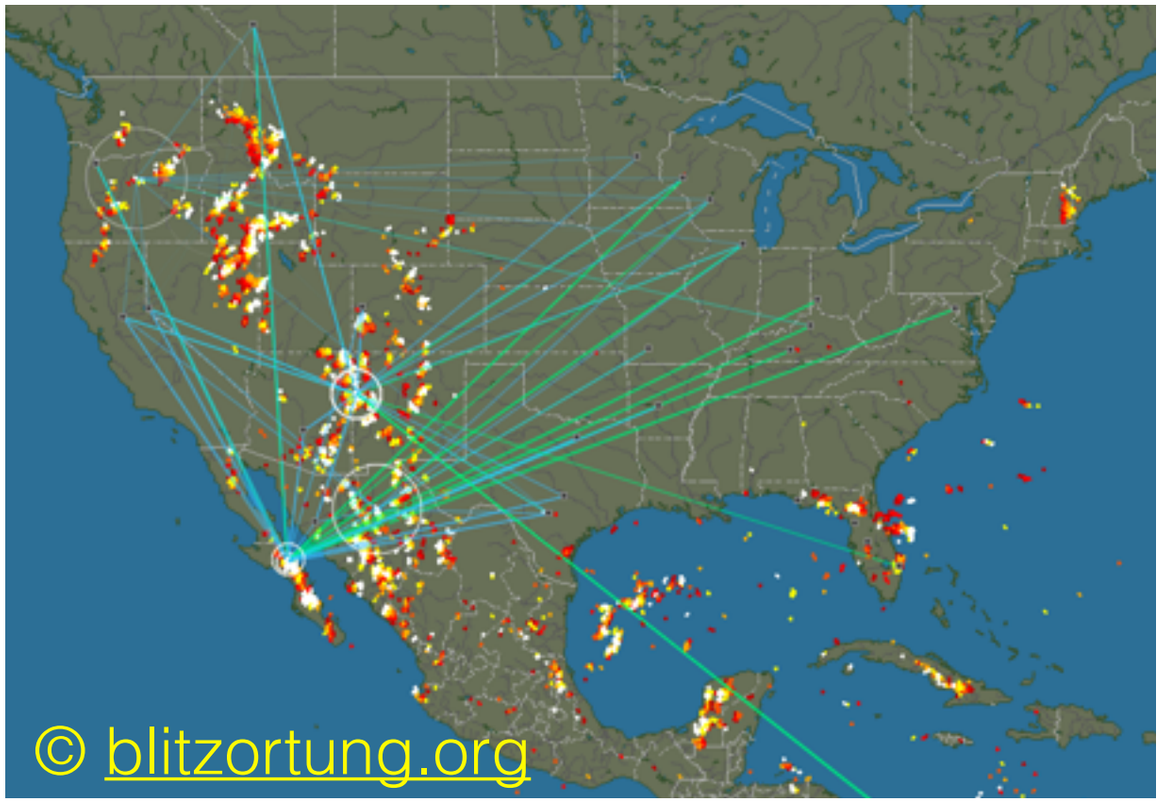
Wikipedia commons

Trends

- Pseudo-Monopolies:
  - global (e.g., Väisälä)
  - national (gov't weather services)

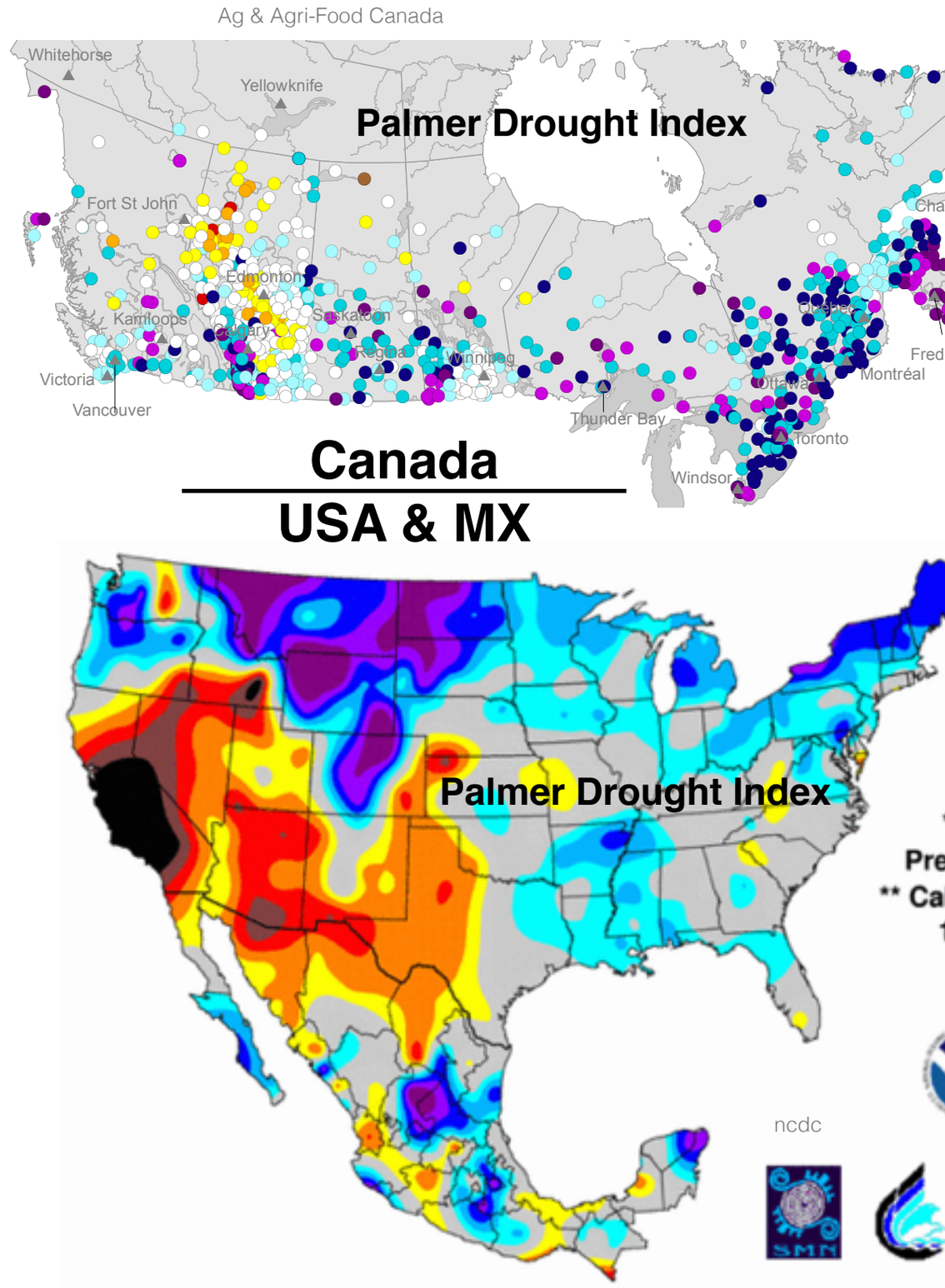
- Backlash against monopolies/data-restrictions: (e.g., blitzortung.org)

- Side-steps due to data restrictions:
  - GFS & WRF in Europe
  - Skew-T in Canada.



Roadblocks

- Parochialism - weather maps stop at borders
- Nationalism - preference for nationally produced forecast over better international forecast.
- Tariffs - extra fees across borders
- Mindset of national forecast centers on who “could” or “should” do operational forecasting
- Underbidding by national forecast centers (a disincentive that eliminates competitors)



More Roadblocks

- Inability of public to differentiate between **good** forecasts and **pretty** forecasts

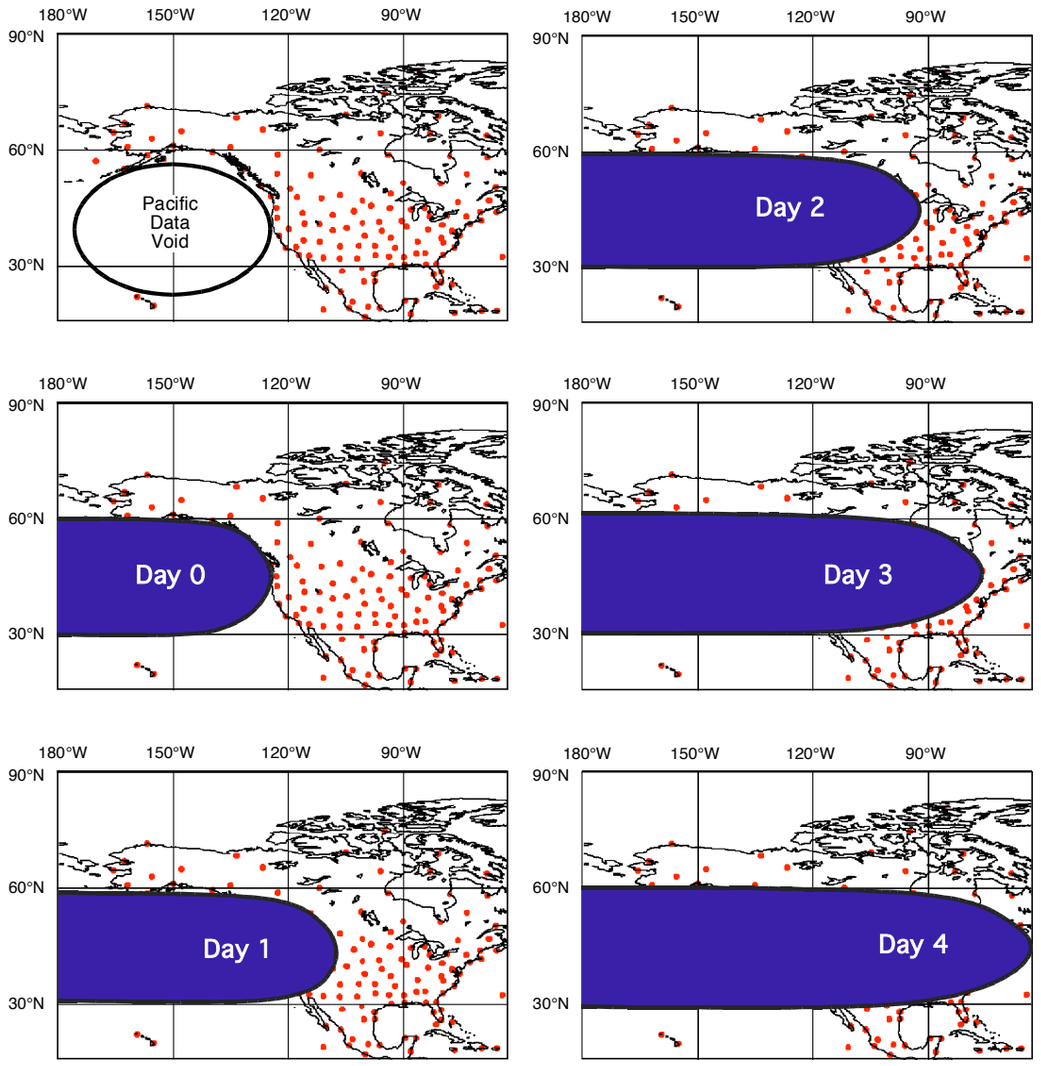
- The cloud vs. **privacy**

- Myopic strategic vision:
  - west vs. east coast forecast skill differences due to **Pacific data paucity**

- Bullies: **satellite** lobby

- **Lethargy** to innovation:
  - hPa vs. gluons & quarks

"Shadow" of the Pacific Data Void as it Propagates across North America



Operational NWP by a Canadian University

Stimulants:

- Place in Enterprise
- Enablers
- Motivation
- Comparisons
- Trends
- Roadblocks

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