SMAP Field Campaigns Discussion

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Discussion Part 1: General Perspectives

- Background
- Objectives (Algorithm/Rehearsal?)
- Constraints
- Outcomes
  - Consensus on SMAPVEX12
  - Consensus on CanEx-FT
  - Preliminary concept for SMAPVEX15
  - Other actions?

Field Campaign Plan Approach

- ## Pre-launch
  - Collect data in response to algorithm needs ASAP in order to aid in development.
  - Support the establishment of core validation sites.
  - Exploit complementary satellite sensors as surrogates of SMAP.

- ## Post-launch
  - Validation of *L1 and L2* products as quickly as possible after launch/IOC.

- ## Exploit Collaboration

SMAP Major Field Experiments

Year/ Quarter	1	2	3	4
2008			SMAPVEX08	
2009				SMOS
2010			SMAPEx-1 CanEx-SM	SMAPEx-2
2011		Aquarius	SMAPEx-3	
2012	GCOM-W		SMAPVEX12	
2013		CanEx-FT		ALOS-2
2014	SAOCOM			SMAP
2015	SMAPVEX15	SMAPVEX15	SMAPVEX15	

International Collaboration
- Canada
- Australia

Satellite Launches are in Red

Is This the Right Plan?

- Consider the updated algorithm requirements.
- Should the focus be on the rehearsal for post-launch validation?
  - What should the SMAPVEX15 campaign look like?
- What do we do if SMAP is delayed (and we know about it soon)?
- Do we need to do most of this in the U.S.?

Is This the Right Plan?

- Consider the updated algorithm requirements.
  - Can/should we try to meet these?
  - Is it feasible considering
    - Resources
    - Different demands on experiment design
    - The uncertainties of weather
    - Amount of time available to effectively conduct, process, and utilize the data for algorithm development

Is This the Right Plan?

- Should the focus be a rehearsal for post-launch validation?
    - Rehearsal or algorithm?

Rehearsal Campaign

- Rehearsal is a risk reduction exercise for post-launch validation.
    - Post-launch…there is no time for do-over, must be completed quickly.
    - Should use the actual post-launch sites (no surprises), which means that a decision needs to be made on these.
        - Forces in situ infrastructure to be ready.
        - Resolves aircraft component; flight lines, operating conditions….
        - Ground sampling logistics resolved.
        - Identifies RFI issues.
        - Better cost estimation.
    - How long does it have to be?
    - How soon does it need to be?

Algorithm Driven Campaign

- A field campaign to support algorithms requires being responsive to the updated requirements.
- Satisfying these requirements may demand sites that are different than the major types used in validation.
- Likely to require extended times series (20 days+)
- More demanding of ground sampling.
- In order to impact and support algorithm development, this type of experiment needs to be conducted as soon as possible.
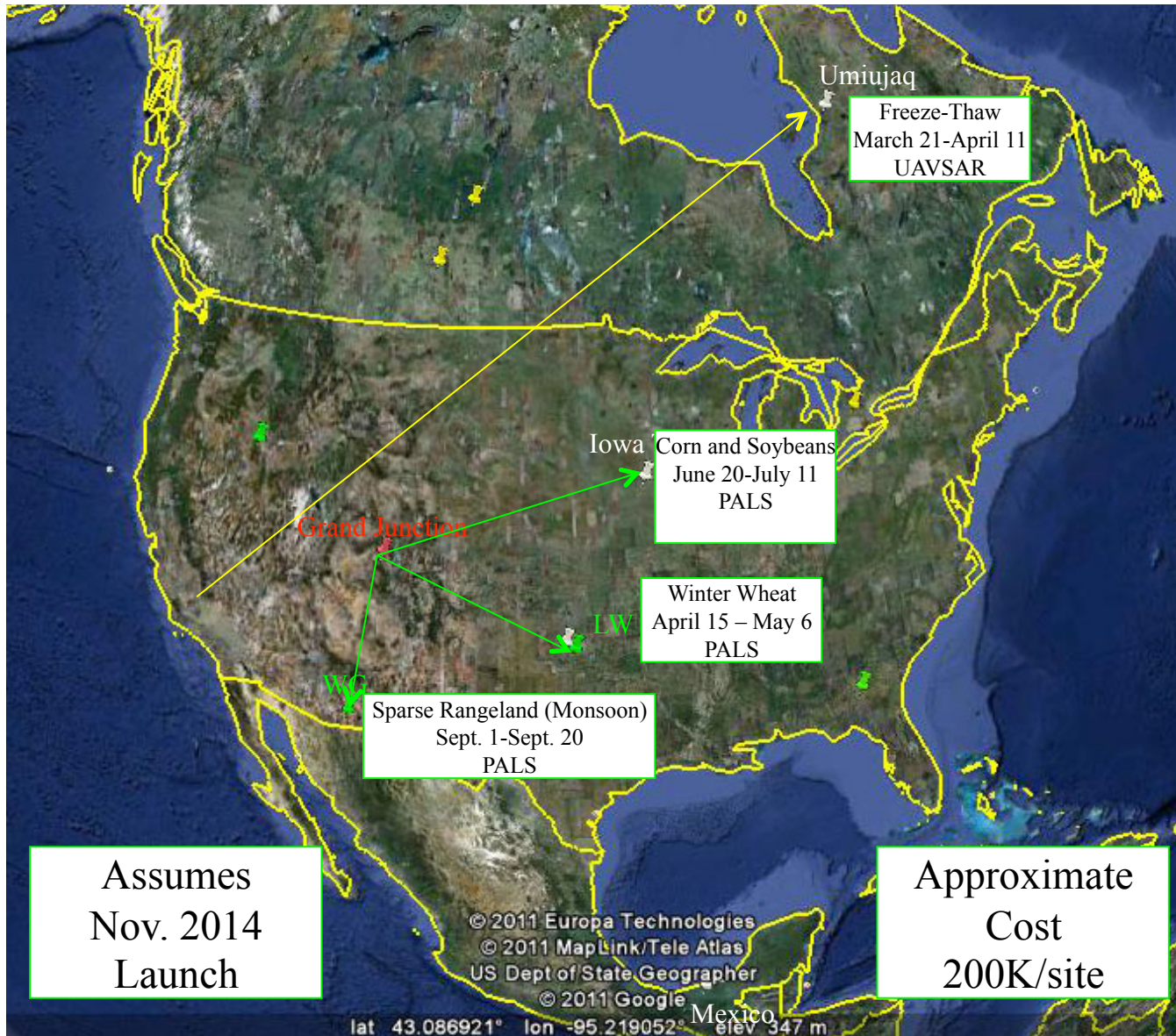
Is This the Right Plan?

- Should the focus be rehearsal for post-launch validation?
    - Rehearsal or algorithm?

Is This the Right Plan?

- Should the focus be rehearsal for post-launch validation?
  - What should the SMAPVEX15 campaign look like?
    - Where, when, instruments, ……

SMAPVEX15 Concept A

Umiujaq

Freeze-Thaw
March 21-April 11
UAVSAR

Iowa — Corn and Soybeans
June 20-July 11
PALS

Grand Junction

Winter Wheat
April 15 – May 6
PALS

LW

WG — Sparse Rangeland (Monsoon)
Sept. 1-Sept. 20
PALS

Assumes
Nov. 2014
Launch

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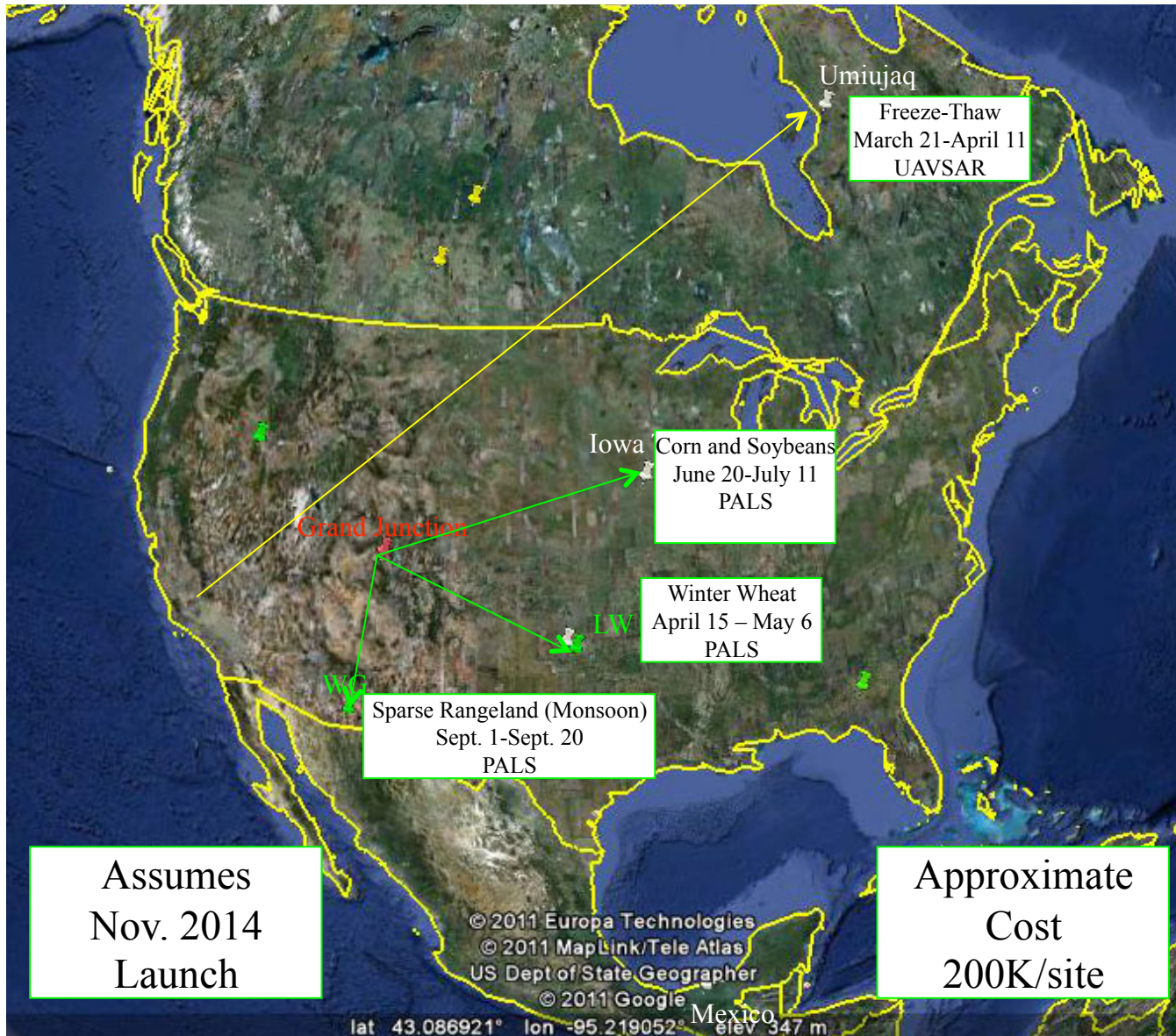lat 43.086921° lon -95.219052° elev 347 m

Approximate
Cost
200K/site

Is This the Right Plan?

- – What should the SMAPVEX15 campaign look like?
- – Do we want to include L1?
- What do we do if SMAP is delayed (and we know about it soon)?
  - – Scenarios
    - Launch Nov. 2014   Validation Mar. 2015-Feb. 2016
      - – Current plan
    - Launch Mar. 2015   Validation June. 2015-May 2016
      - – Can (Should) we conduct a field campaign during IOC?
      - – FT moves to Oct. 2015
    - Launch June 2015   Validation Sept. 2015-Aug. 2016
      - – Can (Should) we conduct a field campaign during IOC?
      - – FT moves to Oct. 2015, LW moves to 2016, Iowa?
  - – Do we need a Plan B if a site is lost or there is a seasonal mismatch?
- Do we need to do most of this in the U.S.?

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Mexico

lat 43.086921° lon -95.219052° elev 347 m

Constraints and Major Issues

- Fiscal Resources: continue to decrease, more likely to get worse.
  - "We" are all contributing to these efforts by exploiting in house resources and complementary projects.
  - The longer we delay any campaign, the greater the chance of another issue impacting the experiment.
  - Contingency funds are necessary to deal with uncertainties.
- Ground Support: warm bodies are necessary
  - Who is paying to get them there?
  - The cost of putting people in the field to collect data, just like aircraft, must be supported by SMAP.
- Aircraft Support: why bother with field experiments if there are no aircraft?
  - NASA's Venture program has created distractions and logistical constraints.