SMAPVEX16

SMAP 2016 Field Campaign
Manitoba, Canada

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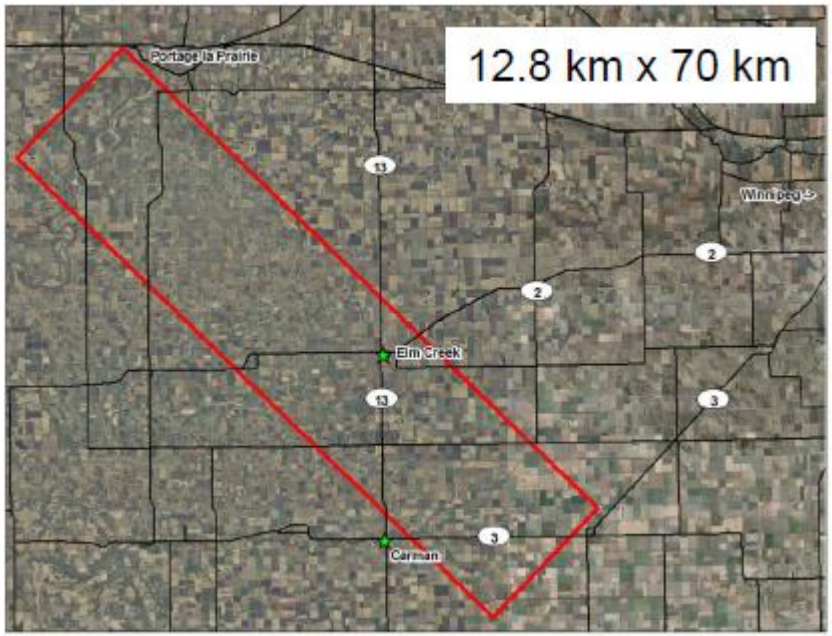
Overview

- Review 2012 (SMAPVEX12) Campaign
- Objectives & Planning SMAPVEX2016

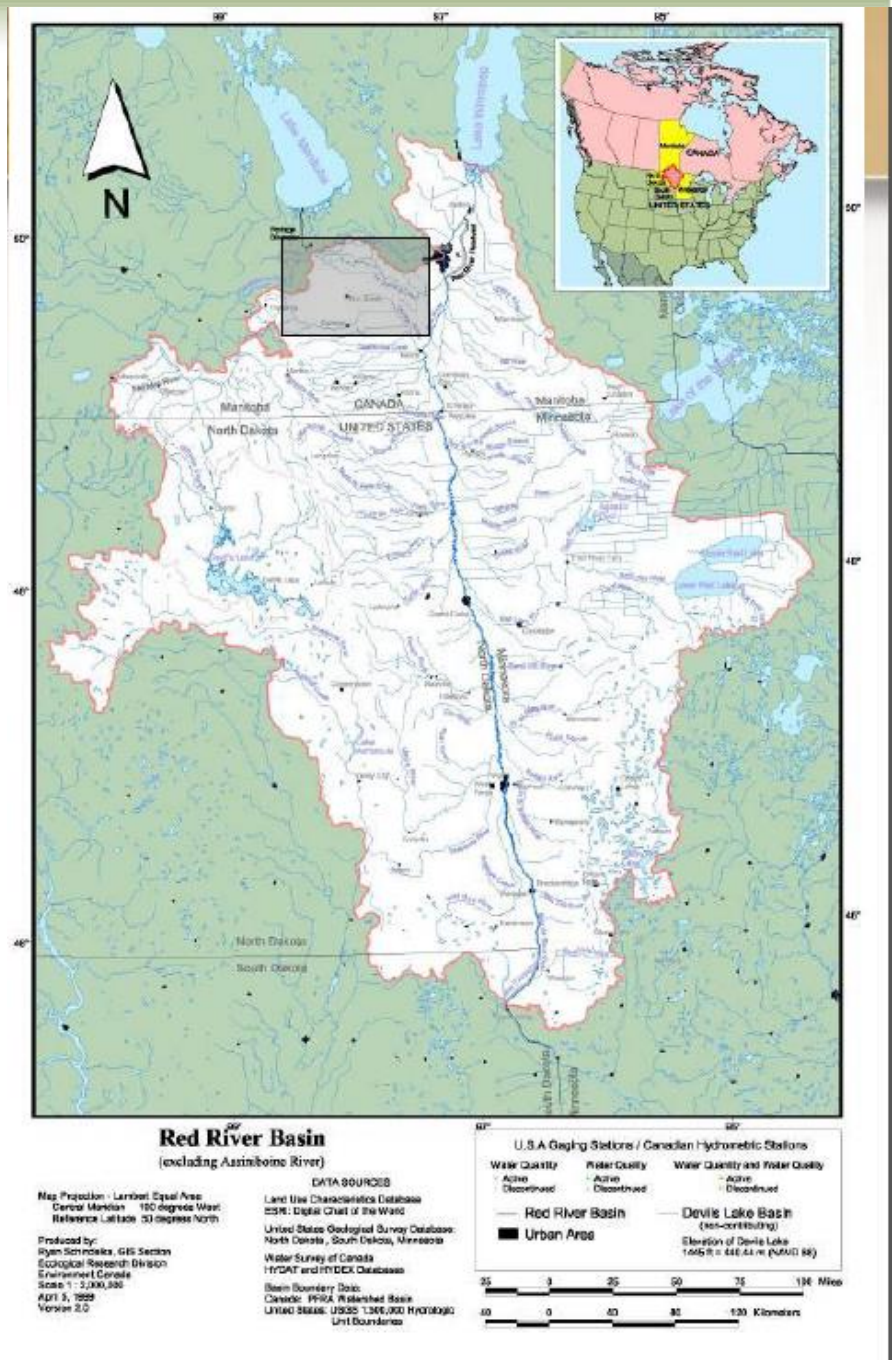
SMAPVEX12

- Conducted in south-central Manitoba, Canada June 7 – July 19, 2012.
- Objectives of the campaign were to calibrate/validate retrieval models for SMAP data and products.
- Vegetation and soil moisture/temp samples taken on 50 annual crop, 5 forage and 4 forested fields during the 7 week campaign.
- Field sampling supplemented with soil moisture/temp data from 44 temporary stations and 9 permanent stations (AAFC-RISMA).
- NASA coordinated a total of 17 overflights of the study area with PALS and UAVSAR sensors.
- Additional optical (RapidEye, SPOT) and SAR (RADARSAT2, TerraSAR X) imagery was acquired throughout the campaign.
- Approximately 70 individuals from 19 Canadian & US Govt agencies/universities participated.

Site Location



- Located southwest of Winnipeg in the Portage-Elm Creek-Carman area.
- Diverse range of coarse-textured soils to fine-textured heavy clay soils.
- Agriculture (annual crop and forage production). Deciduous forest south of Portage.



Soil Moisture

- All measurements were taken during PALS & UAVSAR flights.
- Stevens Hydra-Probes used to capture soil moisture at 16 locations per field.
- Soil moisture cores used to provide volumetric soil moisture and bulk density data at 1 location per field.
- Subsurface & surface soil and vegetation temperatures recorded at 4 sites per field.

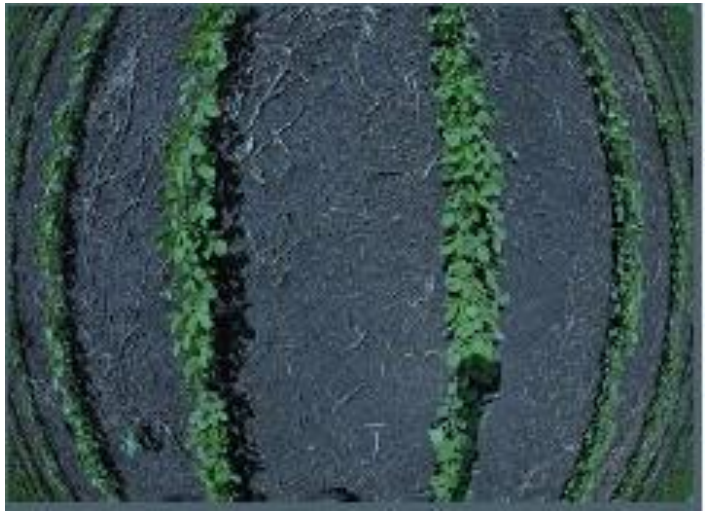
NASA's Twin Otter with PALS sensor in action – SMAPVEX12

Soil Moisture Stations

- Network of 44 temporary stations were installed to monitor surface (5cm) soil moisture conditions.
- 9 permanent stations, part of AAFC's RISMA network were used to monitor surface/rooting zone soil moisture at 0-5cm, 5cm, 20cm, 50cm, 100cm.
- RISMA stations are instrumented with met sensors to provide temp, precip, wind speed/direction.

Vegetation

- Fields were sampled once per week on non-flight days.
- Crop measurements (stem diameter, stem angle, leaf size, crop height, crop orientation/direction)
- LAI measurements using fish eye lense camera
- Crop growth stage (BBCH scale)
- Wet/dry biomass samples.
- Surface roughness using pinboards were done at the start of the campaign.
- Separate forest vegetation sampling protocols.



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- Campaign to be conducted in the same study area. Good representation of crop and soil types. AAFC RISMA network is a core validation site for SMAP.
- Objectives for the campaign? Opportunity to validate downscaling/application of other SAR sensors following the loss of SMAP radar.
- Planning for SMAPVEX16? Previous campaign planning started 10 mos in advance.
- Funding/Resources. CSA has provided funding to AAFC, EC and universities for Canadian participation. Less AAFC staff available for this campaign. US contribution?

SMAPVEX16

- Airborne sensors? Will the campaign have both PALS and UAVSAR sensors deployed?
- What soil/vegetation field measurements will be required? Opportunity to utilize new technologies (UAVs)?
- SLAP Freeze/Thaw campaign planned for MB study area Nov, 2015 following SMAP Canada Meetings in Winnipeg Oct 27-28, 2015.