

Hatfield-4302: Floodplain mapping and understanding flood extent and flood frequency.

Floodplain mapping and understanding flood extent and flood frequency

Challenge

Challenge ID:	HCP-4302	Originator:	Onshore: Hatfield
Title:	Floodplain mapping and understanding flood extent and flood frequency		
Theme:	ON 4.3: Environmental monitoring - Natural Hazard Risk Analysis		
Consortium Lead:	Hatfield	Interviewed Company:	Hatfield
Geography:	ON.REG.00 - Generic onshore		
Challenge Description			
What is not possible / not adequately addressed at present?			
Characterisation of floodplains, flooding patterns and flood hazard is necessary to avoid or mitigate construction and operating risks. Historical flood frequency and extent needs to be incorporated. It can be challenging to obtain elevation data or observe flooding using satellite imagery in forested areas.			
What effect does this challenge have on operations?			
Exploration and development in floodplains presents environmental, health and safety risks. Floods can cause significant damage to infrastructure with associated economic impacts.			
Thematic information requirements:	Terrain information Land use Land cover Distribution and status of infrastructure Distribution and status of assets Water quantity Topographic information		
What do you currently do to address this challenge?			
How is this challenge conventionally addressed?			
Use of aerial photos, optical imagery, and LiDAR to map floodplains and model water extent in lowland areas. Some use of radar imagery to map observed flood extent. Vegetation can be mapped to define recent active channels in drier areas to anticipate areas that may be influenced by flash flood or freshet events.			
What kind of solutions do you envisage could address this challenge?			
Cost-effective floodplain mapping, combining elevation data and optical images. Analysis of historical floods. Accurate delineation of flooded area under forest canopy.			
What is your view on the capability of technology to meet this need?			
Are you currently using EO tech? If not, why not?			
Lack of available historical / archive images and there are challenges to map flooding that occurs below the canopy. Hydrological modelling and use of elevation data remains the most reliable approach.			
Challenge Classification			
Impact on Lifecycle (0=none, 4=high):		Climate / Topography / Urgency:	
Pre-license:	1	Climate class:	Generic climate
Exploration:	4	Topographic class:	Not specific
Development:	4	Seasonal variations:	Warmer weather focus
Production:	3	Impact area:	Health and Safety
Decommissioning:	1	Technology urgency:	3 - Immediately (0-2 years)
Challenge Information Requirements			
Update frequency:	Snapshot		

Data currently used:	Local knowledge, field data (including flow monitoring data), optical imagery, radar imagery
Spatial resolution:	Regional
Thematic accuracy:	Not specific
Required formats:	Not specific
Timeliness (Vintage):	Reference data
Geographic extents:	Basin, License
Existing standards:	None

Relevant products

- [Product Sheet: Elevation](#)
- [Product Sheet: Flood extent](#)
- [Product Sheet: Floodplain mapping and Flood risk assessment](#)
- [Product Sheet: Land Cover Characterisation](#)
- [Product Sheet: Land Use](#)
- [Product Sheet: Slope](#)
- [Product Sheet: Soil Sealing](#)