Hatfield-4207: Understanding and predicting changes in hydrological processes

Understanding and predicting changes in hydrological processes

Challenge

Challenge ID:	HCP-4207	Originator:	Onshore: Hatfield
Title:	**Understanding and predicting changes in hydrological processes.**		
Theme:	ON 4.2: Environmental monitoring - Continuous monitoring of changes throughout the lifecycle		
Consortium Lead:	Hatfield	Interviewed Company:	Hatfield
Geography:	ON.REG.03 - Canada		

Challenge Description

What is not possible / not adequately addressed at present?

There is a need to understand surface hydrology within the project area, including catchments and watersheds, sheet flows on plains, seasonal characteristics of ephemeral drainage systems (wadis and lakes), buried / infilled valleys, and marsh / bog detection. Development may create changes in water flows by isolating certain areas hydrologically, changing drainage patterns, and clearing vegetation.

What effect does this challenge have on operations?

Early identification of constraints and opportunities, reduces project uncertainty, and improves decision making for field development. Understanding disturbance within catchments for modelling and predicting potential impacts of development on surface hydrology and stream discharge.

Thematic information requirements:	Land cover Land use Terrain information Topographic information Water quantity Ortho base images

What do you currently do to address this challenge?
How is this challenge conventionally addressed?

Aerial photographic interpretation and support from field mapping, walkover surveys and fly-by surveys is also performed. Hydrological monitoring and modelling.

What kind of solutions do you envisage could address this challenge?

LiDAR can help to identify drainage in densely vegetated areas where surface cannot be observed. Improvements to thermal imaging. Distributed hydrological models.

What is your view on the capability of technology to meet this need?
Are you currently using EO tech? If not, why not?

Improved DEMs. EO can complement ground-based and airborne techniques and provide wider geographic coverage at lower cost.

Challenge Classification

Impact on Lifecycle (0=none, 4=high):		Climate / Topography / Urgency:	
Pre-license:	2	Climate class:	Generic climate
Exploration:	2	Topographic class:	Not specific
Development:	4	Seasonal variations:	Warmer weather focus
Production:	3	Impact area:	Health and Safety Cost reduction
Decommissioning:	2	Technology urgency:	3 - Immediately (0-2 years)

Challenge Information Requirements

Update frequency:	Snapshot to annually
Data currently used:	Visual assessment of vegetation and understory by field crews. Air photo interpretation DEM analysis (ASTER, SRTM, High res optical DEM) Google Earth
Spatial resolution:	Regional to License
Thematic accuracy:	Not specific
Required formats:	Not specific
Timeliness (Vintage):	Reference data
Geographic extents:	License
Existing standards:	None

Relevant products

Content by label

There is no content with the specified labels