

OTM-014: Forecasting sand dune migration

Forecasting sand dune migration

Challenge

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|---|---|------------------------------|------|-------|--------|
| Challenge ID | OTM:014 | | | | |
| 1 Title | Forecasting sand dune migration | | | | |
| 2 Theme ID | ON 5.3: Logistics planning and operations - Facility siting, pipeline routing and roads development | | | | |
| 3 Originator of Challenge | Onshore: OTM | | | | |
| 4 Challenge Reviewer / initiator | BP, Ramani, Shell | | | | |
| General description | | Overview of Challenge | | | |
| 5 What is the nature of the challenge? (What is not adequately addressed at present?) | Predicting the location of geohazards is an important consideration for pipeline routing and facility siting. An asset can be in situ for 25+ years, during which time the location of geohazards can evolve. We must be aware of the migration patterns of these geohazards to ensure that in 25 years time our asset is still functional. | | | | |
| 6 Thematic information requirements | 1. Obtain detailed topographic information, 2. Obtain detailed terrain characterisation, | | | | |
| 7 Nature of the challenge - What effect does this challenge have on operations? | If geohazards such as dune migration are present and these threats are identified, appropriate mitigation can be arranged. This is typically via re-location of the asset. | | | | |
| 8 What do you currently do to address this challenge?/ How is this challenge conventionally addressed? | The use of satellite images, in particular of those freely available on the World Wide Web, is a convenient resource. For more detailed study, the migration of dunes is measured by combining surface mapping with aerial and satellite imagery, GPS, and ground | | | | |
| 9 What kind of solution do you envisage could address this challenge? | Monitoring of sand dune migration can be accomplished through a number of methods, combining surface mapping (DEMs) with aerial and satellite imagery, GPS and LIDAR measurements, together with multi-temporal satellite data analysis. | | | | |
| 10 What is your view on the capability of technology to meet this need? – are you currently using EO tech? If not, why not? | EO could be a useful complimentary technology | | | | |
| Challenge classification | | | | | |
| 11 Lifecycle stage | Pre license | Exp. | Dev. | Prod. | Decom. |
| Score from impact quantification [1] | 2 | 1 | 3 | 2 | 3 |
| 12 Climate classification | Desert | | | | |
| 13 Geographic context/restrictions | Generic onshore (Unspecified) | | | | |
| 14 Topographic classification / Offshore classification | Generic onshore (Unspecified) | | | | |
| 15 Seasonal variations | Any season | | | | |
| 16 Impact Area | Operational cost reduction, strategic decision enabler | | | | |
| 17 Technology Urgency (How quickly does the user need the solution) | Immediately (0-2 years) | | | | |
| Information requirements | | | | | |
| 18 Update frequency | Varies, typically once per month over a period of years | | | | |
| 19 Data Currently used | Satellite imagery or aerial photography | | | | |
| 20 Spatial resolution | Satellite imagery or aerial photography | | | | |
| 21 Thematic accuracy | Varies | | | | |
| 22 Example formats | | | | | |
| 23 Timeliness | Within a month | | | | |
| 24 Geographic Extent | District area | | | | |
| 25 Existing standards | | | | | |

[1] Impact quantification scores: 4 – Critical/ enabling; 3 – Significant/ competitive advantage; 2 – Important but non-essential; 1 – Nice to have; 0 – No impact, need satisfied with existing technology

Relevant products

Content by label

There is no content with the specified labels

