Table 13 Event Based – Flood Plumes

	DATA OPTION 1: Quickbird 2	DATA OPTION 2: MODIS
Spatial Dimensions		
Area to cover	12 km x 12 km per scene	Up to 1000 km ^{2}
Mapping unit	068m panchromatic 4.0 m multi-spectral	0.5m – 5m
Positional accuracy	Dependent on georef-erencing process	Dependent on Geo-referencing process
Temporal Dimensions		
When	Approx 10.45 am	User defined
How often	Minimum every 4 days	User defined (can be < 1 day)
Variable to map	Extent of plume and concentrations of sediments	Extent of plume and concentrations of sediments
Environmental / Sensor Restrictions	For sub-tidal vegetation to depth limited by water clarity. Inter-tidal and supra-tidal vegetation can have water on top. Not possible for turbid water Clouds, strong winds and breaking waves.	For sub-tidal vegetation to depth limited by water clarity. Inter-tidal and supra-tidal vegetation can have water on top. Not possible for turbid water Clouds, strong winds and breaking waves.
Processing technique **(Output)**	Image classification and application empirical or analytical models to estimate sediment concentrations.	Image classification and application empirical or analytical models to estimate sediment concentrations.
Resources – Hardware and Software	PC Image processing software GIS with image classification module (e.g. ARCGIS Image Analyst)	PC Image processing software with Hyper-spectral analysis capabilities, including sub-pixel mapping techniques.
Resource – Personnel	Trained in image classification Experience with high	Trained in hyper-spectral data processing.

	spatial resolution data	
References: Note these are some example references	No specific examples but should be possible. See Curran and Novo (1988)	Tralli et al. (2005), Shi and Wang (2009), Jiang et al. (2009)

Curran, P. and E. Novo, (1988). "The relationship between suspended sediment concentration and remotely sensed spectral radiance: a review." Journal of Coastal Research 4(3): 351-368.

Jiang, L., Yan, X., and Klemas, V. (2009). "Remote sensing for the identification of coastal plumes: case studies of Delaware Bay." International Journal of Remote Sensing 30: 2033-2048.

Shi, W. and Wang, M. (2009). "Satellite observations of flood driven Mississippi River plume in the spring of 2008." Geophysical Research Letters 36: L07607.

Tralli, D. M., Blom, R. G., Zlotnicki, V., Donnellan, A., and Evans, D. L. (2005). "Satellite remote sensing of earthquake, volcano, flood, landslide and coastal inundation hazards." ISPRS Journal of Photogrammetry and Remote Sensing 59: 185-198.

Table 14 Event Based – Ship groundings

	DATA OPTION 1: Quickbird 2	**DATA OPTION 2: Airborne hyper-spectral data**
Spatial Dimensions		
Area to cover	12 km x 12 km per scene	Up to 1000 km ^{2}
Mapping unit	068m panchromatic 4.0 m multi-spectral	0.5m – 5m
Positional accuracy	Dependent on georef-erencing process	Dependent on Geo-referencing process
Temporal Dimensions		
When	Approx 10.45 am	User defined
How often	Minimum every 4 days	User defined (can be < 1 day)
Variable to map	Benthic cover type	Benthic cover type
Environmental / Sensor Restrictions	For sub-tidal vegetation to depth limited by water clarity. Inter-tidal and supra-tidal vegetation can have water on top. Not possible for turbid water Clouds, strong winds and breaking waves.	For sub-tidal vegetation to depth limited by water clarity. Inter-tidal and supra-tidal vegetation can have water on top. Not possible for turbid water Clouds, strong winds and breaking waves.
Processing technique **(Output)**	Image classification or feature detection using segmentation and classification	Image classification or feature detection
Resources – Hardware and Software	PC Image processing software GIS with image classification module (e.g. ARCGIS Image Analyst)	PC Image processing software with Hyper-spectral analysis capabilities, including sub-pixel mapping techniques.
Resource – Personnel	Trained in image classification Experience with high	Trained in hyper-spectral data processing. Knowledge of area to be

	spatial resolution data Knowledge of area to be mapped	mapped
References: Note these are some example references	No specific examples but should be possible See Chabanet et al. (2005) for background information	No specific examples but should be possible See Chabanet et al. (2005) for background information

Chabanet, P., Adjeroud, M., Andréfouët, S., Bozec, Y., Ferraris, J., Garcìa-Charton, J., and Schrimm, M., (2005). "Human-induced physical disturbances and their indicators on coral reef habitats: A multi-scale approach." Aquatic Living Resources 18: 215-230.

Table 15 Event Based – Cyclone

	DATA OPTION 1: Quickbird 2	**DATA OPTION 2: LANDSAT 7 ETM**
Spatial Dimensions		
Area to cover	12 km x 12 km per scene	185 km x 185 km per scene
Mapping unit	068m panchromatic 4.0 m multi-spectral	Heron Reef 15 m panchromatic 30 m multi-spectral
Positional accuracy	Dependent on georef-erencing process	Dependent on Geo-referencing process
Temporal Dimensions		
When	Approx 10.45 am	Approx 9.45 am
How often	Minimum every 4 days	every 16 days
Variable to map	Benthic cover type	Reef Province Reef Type Geomorphic Zones
Environmental / Sensor Restrictions	For sub-tidal vegetation to depth limited by water clarity. Inter-tidal and supra-tidal vegetation can have water on top. Not possible for turbid water Clouds, strong winds and breaking waves.	For sub-tidal vegetation to depth limited by water clarity. Inter-tidal and supra-tidal vegetation can have water on top. Not possible for turbid water Clouds, strong winds and breaking waves.
Processing technique **(Output)**	Image classification or feature detection using segmentation and classification. Object based analysis or manual delineation	PC Image processing software GIS with image classification module (e.g. ARCGIS Image Analyst), Object based analysis software if using this technique.
Resources – Hardware and Software	PC Image processing software GIS with image classification module (e.g. ARCGIS Image Analyst) When object based analysis then experience	Trained in image classification Experience with Landsat data Knowledge of reef geomorphology to be mapped

	with object based analysis software (e.g. Ecognition)	When object based analysis then experience with object based analysis software (e.g. Ecognition)
Resource – Personnel	Trained in image classification Experience with high spatial resolution data Knowledge of area to be mapped	PC Image processing software GIS with image classification module (e.g. ARCGIS Image Analyst), Object based analysis software if using this technique.
References: Note these are some example references	Scopélitis et al (2009)	Klemas (2009)

Klemas, V. (2009). "The Role of Remote Sensing in Predicting and Determining Coastal Storm Impacts." Journal of Coastal Research 25: 1264-1275

Scopélitits J., Andréfouët S., Phinn S., Chabanet P., Naim O. , Tourrand C., Done T. (2009) "35 years of coral community change on Saint-Leu Reef (la Réunion, Indian Ocean) from in situ and remote sensing assessment." Estuarine and Coastal Shelf Science 84: 342-352.

Table 16 Event Based – Oil Spills

	DATA OPTION 1: Quickbird 2	**DATA OPTION 2: Radarsat or Terrasar**
Spatial Dimensions		
Area to cover	12 km x 12 km per scene	Up to 3600 km ^{2}
Mapping unit	068m panchromatic 4.0 m multi-spectral	5m -60m
Positional accuracy	Dependent on georef-erencing process	Dependent on Geo-referencing processGeo-referencing
Temporal Dimensions		
When	Approx 10.45 am	User defined
How often	Minimum every 4 days	User defined (can be < 1 day)
Variable to map	Extent of oil spill on water surface	Extent of oil spill on water surface
Environmental / Sensor Restrictions	Cloud cover, strong winds and breaking waves.	Strong winds and breaking waves.
Processing technique **(Output)**	Image classification or feature detection using segmentation and classification	Image classification or feature detection using segmentation and classification
Resources – Hardware and Software	PC Image processing software GIS with image classification module (e.g. ARCGIS Image Analyst)	PC Image processing software with radar image analysis capabilities, including sub-pixel mapping techniques.
Resource – Personnel	Trained in image classification Experience with high spatial resolution data Knowledge of area to be mapped	Trained in radar data processing. Knowledge of area to be mapped
References: Note these are some example references	Wettle et al (2009) Hese and Schmullius (2009)	Brekke and Solberg (2005) Ferraro et al (2010)

Brekke, C. & Solberg, A. H. S. (2005). Oil spill detection by satellite remote sensing. *Remote Sensing of Environment,* 95, 1-13.

Ferraro, G., Baschek, B., de Montpellier, G., Njoten, O., Perkovic, M., and Vespe, M. (2010). "On the SAR derived alert in the detection of oil spills according to the analysis of the EGEMP." Marine Pollution Bulletin 60: 91-102.

Hese, S. and Schmullius, C., (2009). "High spatial resolution image object classification for terrestrial oil spill contamination mapping in West Siberia." International Journal of Applied Earth Observation and Geoinformation 11: 130-141.

Wettle, M., Daniel, P., Logan, G., and Thankappan, M. (2009). "Assessing the effect of hydrocarbon oil type and thickness on a remote sensing signal: A sensitivity study based on the optical properties of two different oil types and the HYMAP and Quickbird sensors." Remote Sensing of Environment 113: 2000-2010.