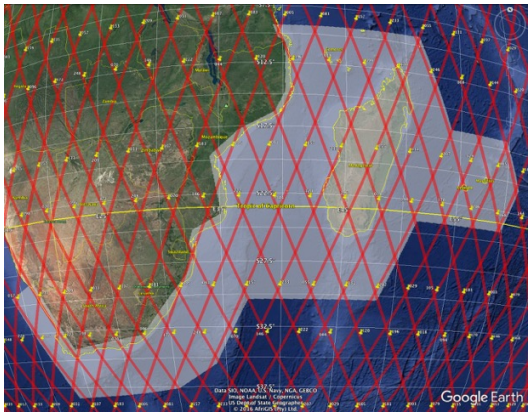
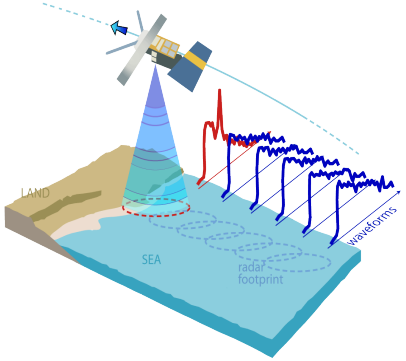
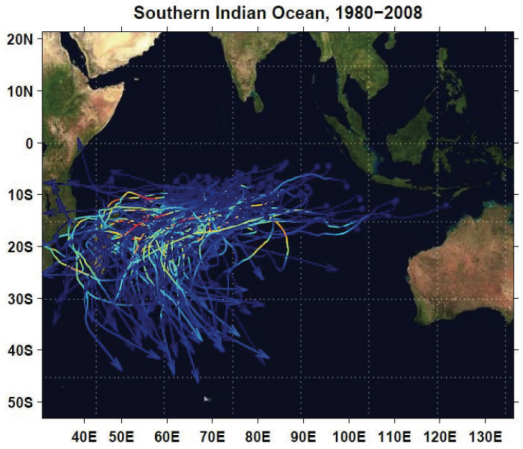
CRISe – Coastal Risk Information Service

UKSA International Partnership Programme







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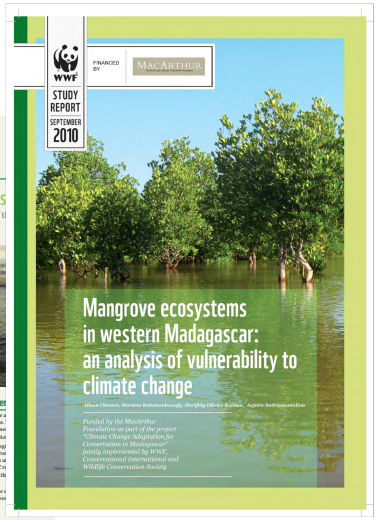

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C-RISe: Service Objectives

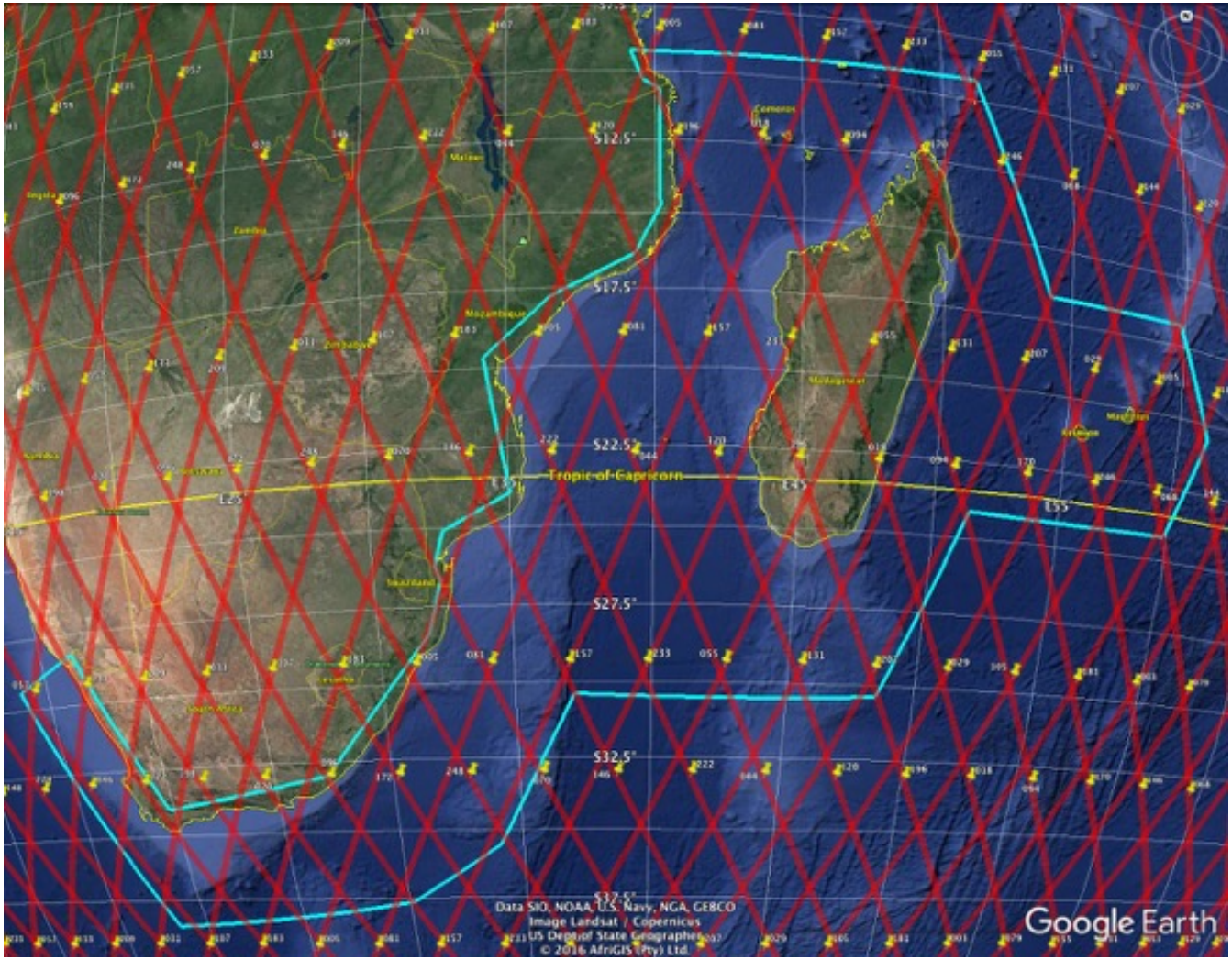
- Provide information to help local stakeholders reduce the social & economic impact of coastal inundation & variable weather patterns.
- Access to information on sea level rise, wind speed & wave heights derived from satellite altimetry & validated with in-situ data.
- Deliver information through a web portal, and support local partners using the data.
- Develop case studies to demonstrate /evaluate use in different application areas

C-RISe: Products

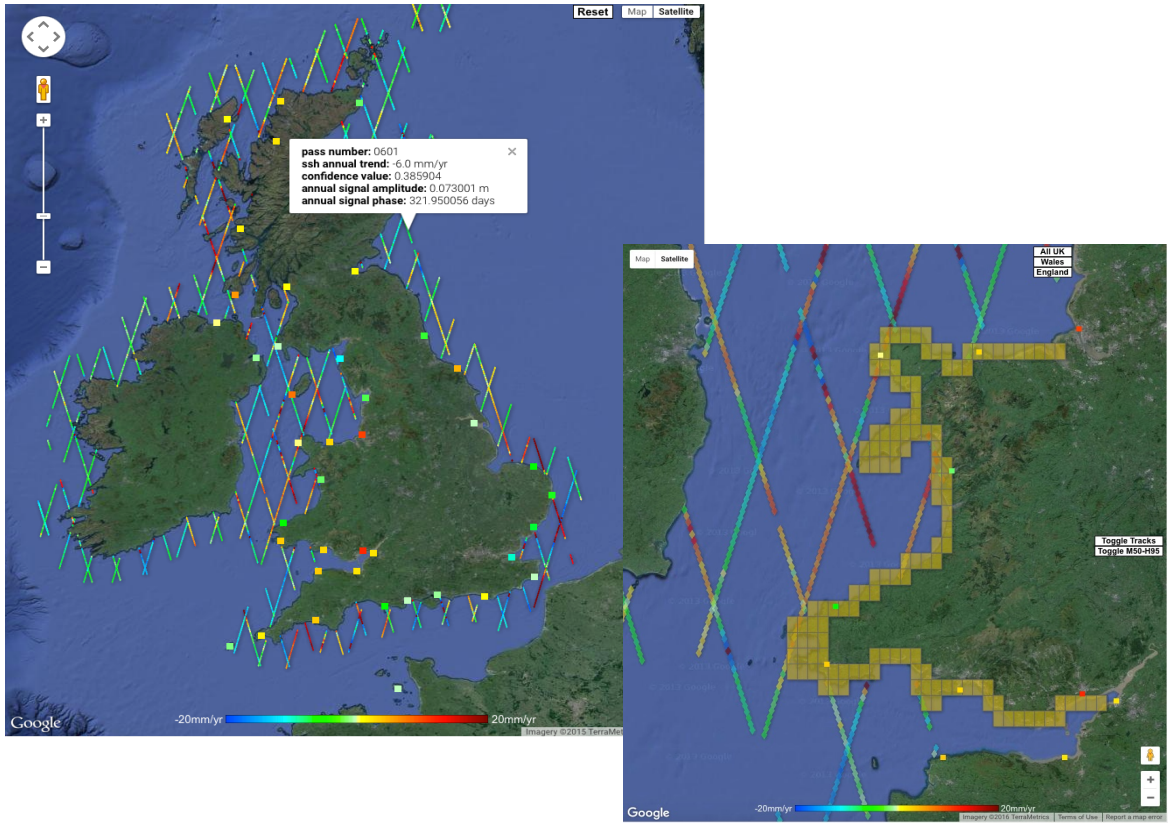
- **What Products / Information are proposed for CRISe ?**
- Satellite-derived data on sea level, wind speed and wave heights, together with statistics derived from these data, and from local tide gauge data.
- Validation against local data sources and analyses of regional, seasonal and inter-annual variability.
- Delivered through a regional geo-spatial information tool: CSIR's OCIMS (Oceans and Coasts Information Management System)

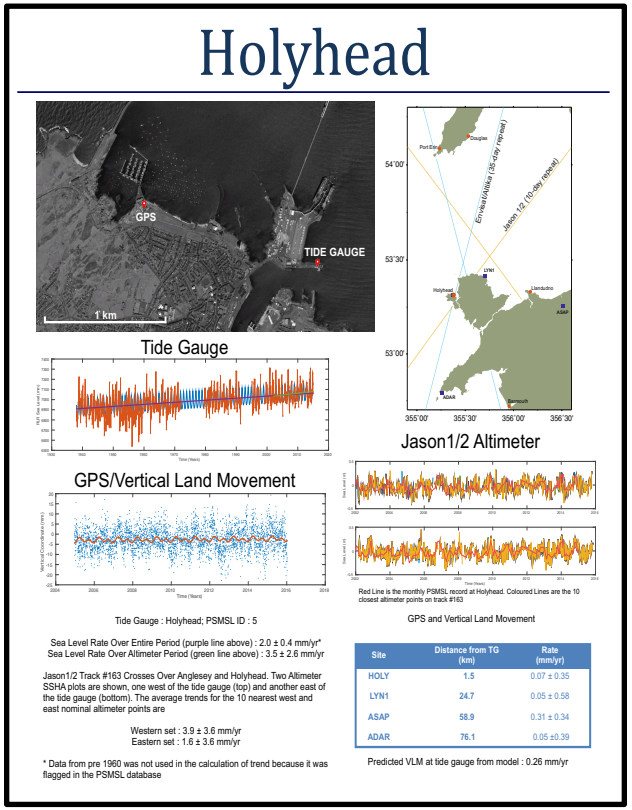
Parameter	Description	Time Coverage	Satellites
Total Water Level Envelope, significant wave height, surface radar backscatter	Along track data from the NOC coastal processor	2002-2016	Jason-1, Jason-2, Jason-3
Significant Wave Height and Wind Speed Climatologies	Monthly, 1° x 1° gridded climatologies, sourced from Globwave	1992-2014	ERS-1, ERS-2, Envisat, Topex, Jason-1, 2,3
Significant Wave Height, wind speed	Near Real Time along track data	Daily updated	Jason-2,
Wind speed and wind direction	Near Real Time data across scatterometer swath (25km resolution)	Daily updated	Metop/ ASCAT-A

Application to C-RISe



Variability in Sea Level Trends – UK example



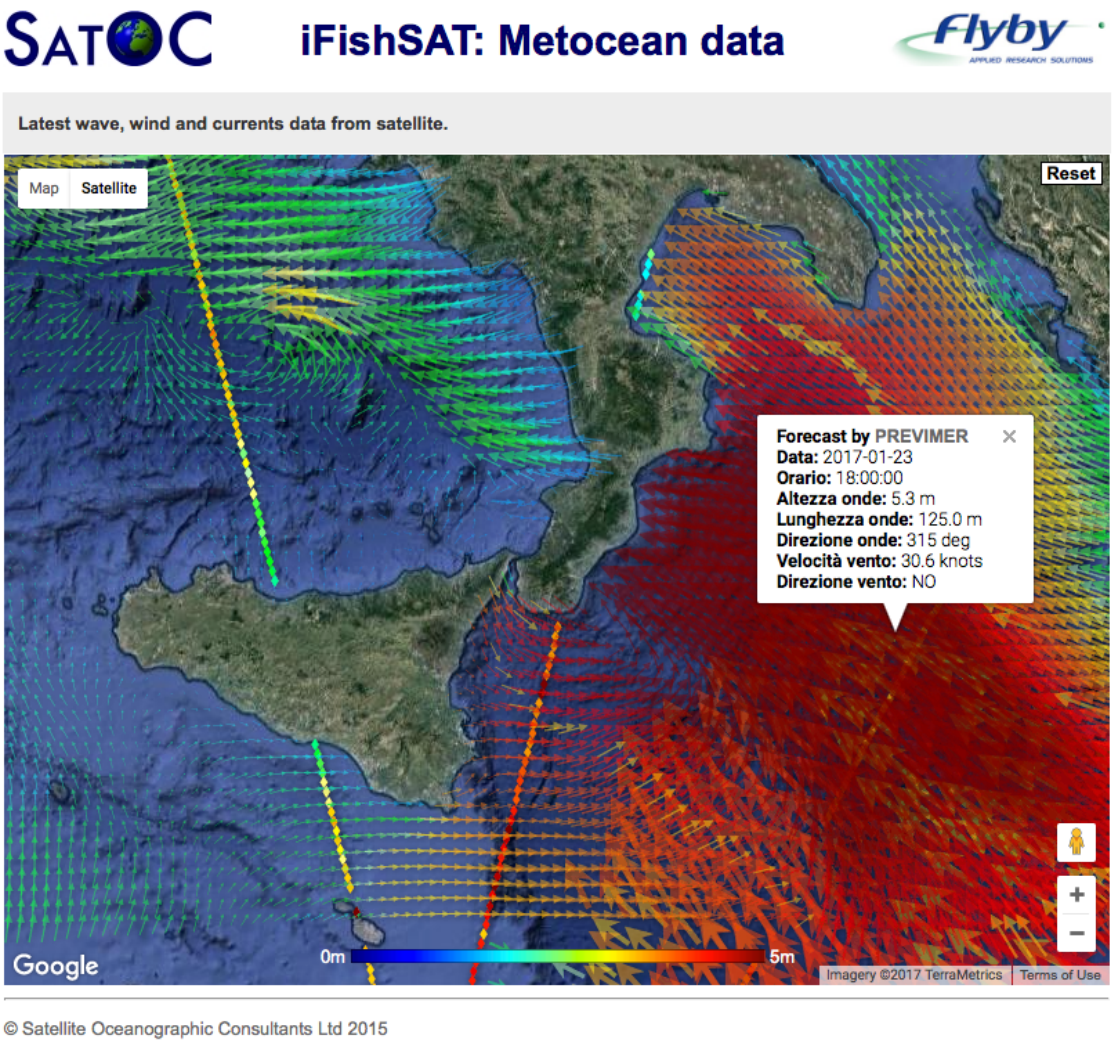


Web based service

- 2002-2014 sea level data set for Jason series
- Tide Gauge data from 42 National Tide and Sea Level Facility and 11 Channel Coast Observatory sites
- Zoomable map interface showing sea level trends
  - Access to trend data and underlying satellite time series
- Coastal grid squares showing climate projections (UKCP09)
- Detailed analyses at key locations

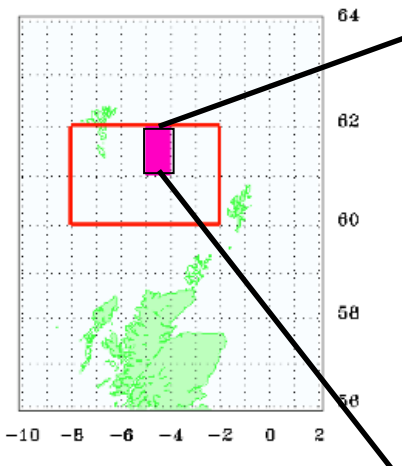
http://www.satoc.eu/projects/sealevelsw/test.html

Near Real Time wind and wave data

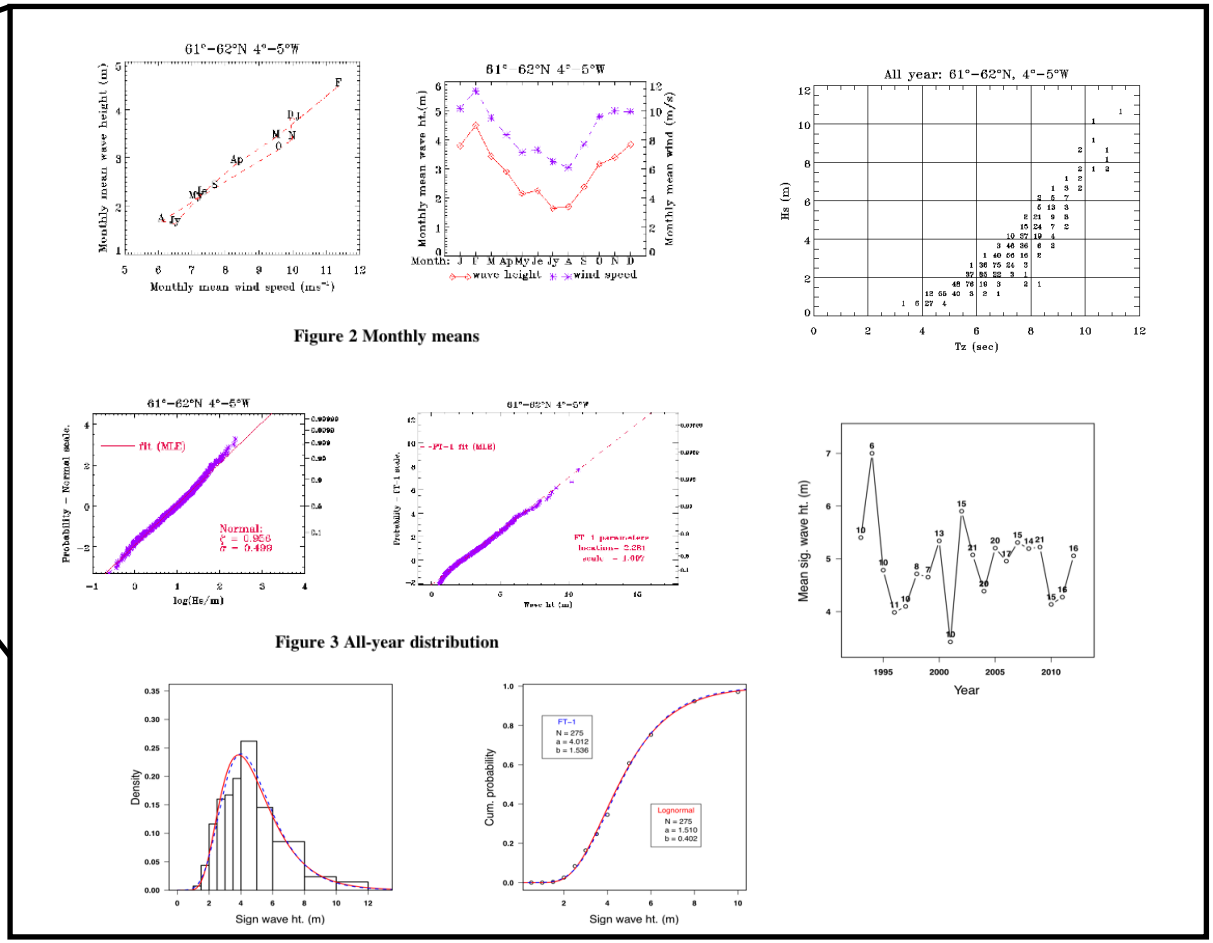


- Web based (google maps) service for fishing
- Satellite wind and wave data and wave model forecasts

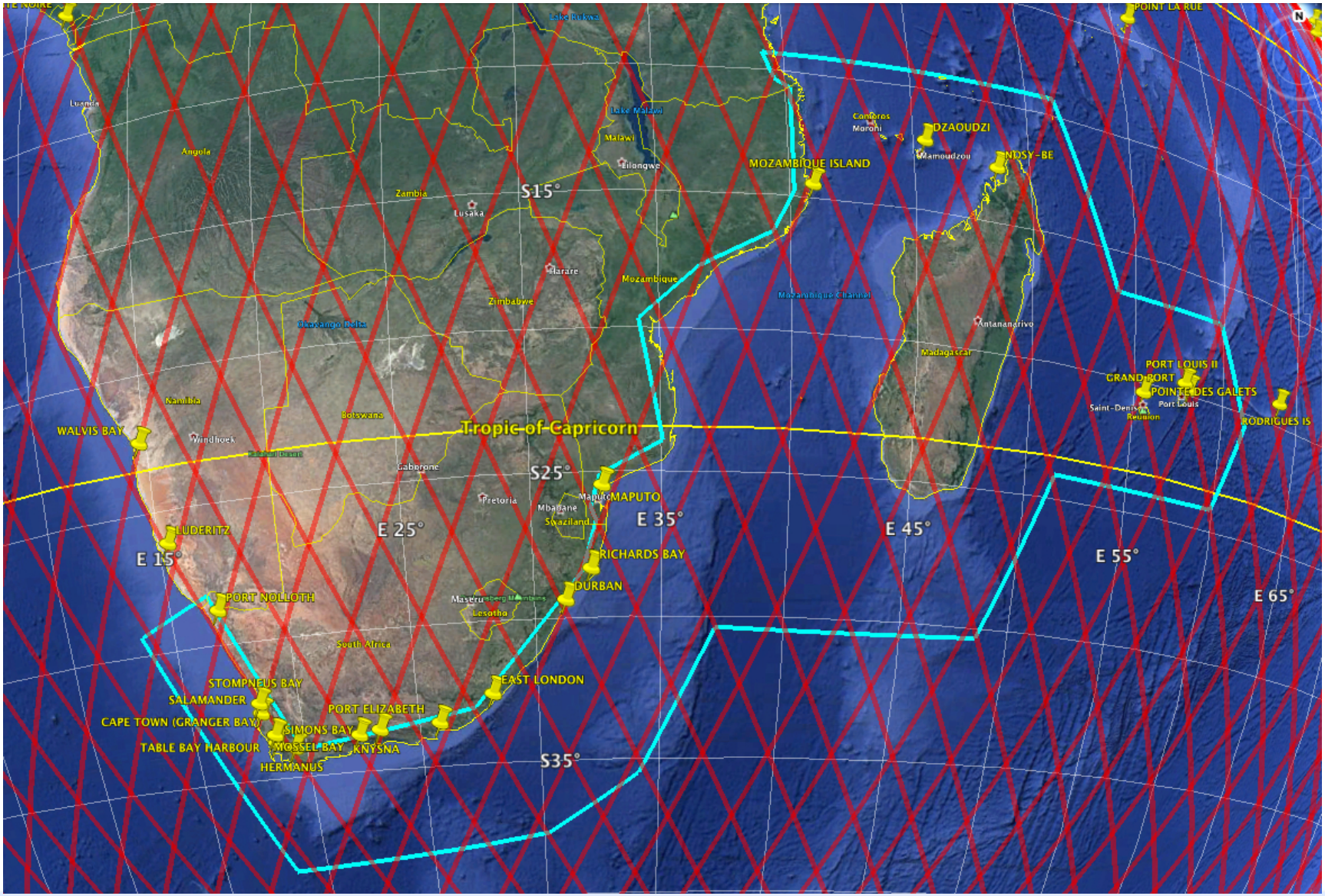
Wave Climate Statistics



- Probabilities / return periods for extreme waves.
- Seasonal / inter-annual variability.
- Joint wave height / wave period, and wave height wind speed distributions / analyses.
- Needed for design: How high do I need to build my platform?
- For Operational Planning: What is the chance of experiencing sig wave height > 2m in October where I want to work?



Application to C-RISe



Tide Gauge Data

Country	Location	PSMSL Monthly & annual means	UHSLC Hourly and daily means	IOC SLMF (High frequency) start date
Tanzania	Mtwara			2009
	Zanzibar	1984-2014	1984-2015	2006
Comores	Comores			2010
Mayotte	Dzaoudzi	2008-2015	2008-2016	2008
Madagascar	Toamasina			2010
	Nosy-Be	1958-1972		
Seychelles	Port La Rue		1977-2016	2007
Reunion	Pointe des Gallets	1975-2015	1982-2016	2008
Reunion	Sainte Marie			2013
Mauritius	Agalega			2009
	Port Louis	1942-2016*	1986-2016	2006
	Blue Bay			2009
	Rodrigues Island	1986-2015	1986-2016	2006
Mozambique	Pemba		2007-2013	
	Inhambe		2007-2014	
	Mozambique Island	1963-1967		
	Maputo	1961-2001*		
S Africa	Saldanha		1973-2016	
	Marlon Island		2007-2016	2007
	Richards Bay	1977-2015*	1977-2016	
	Durban	1971-2015	1970-2016	
	East London	1967-2015*	1965-2016	
	Port Elizabeth	1978-2015	1973-2016	
	Knysna	1960-2015	1966-2016	
	Mossel Bay	1958-2015	1966-2016	
	Hermanus	1958-1964		
	Cape Town (Granger Bay)	1967-2015	1967-2016	
	Salamander	1979-1994		
S Africa	Simons Town	1957-2015	1959-2016	2007
	Port Nolloth	1956-2015	1958-2016	

C-RISe Use Cases

- Use Cases will provide the basis for practical implementation and the Monitoring and Evaluation of the CRISe service in each partner country – testing the usefulness and benefits of the service in real life application
- The Use Cases are now being revised following the input received during discussions with regional partners in February 2017

C-RISe Specification – What we need to know

- Any other satellite products wanted?
- How will these data be made available TO the CRISe portal?
- How will these data be made available FROM the CRISe portal TO the users?
- What in-situ data (also models) can be made available?
  - Location, period, frequency, parameters
  - Just for validation, or more widely available through C-RISe?
- Validation approach:
  - against co-located in situ data, models, statistical validations
- Regional analysis:
  - annual trends, seasonal characteristics, inter-annual variability
- Any specific additional needs for individual use cases?
- Do we need to redefine use cases, or suggest additional use cases?