South Africa's coastal climate risk: a national assessment

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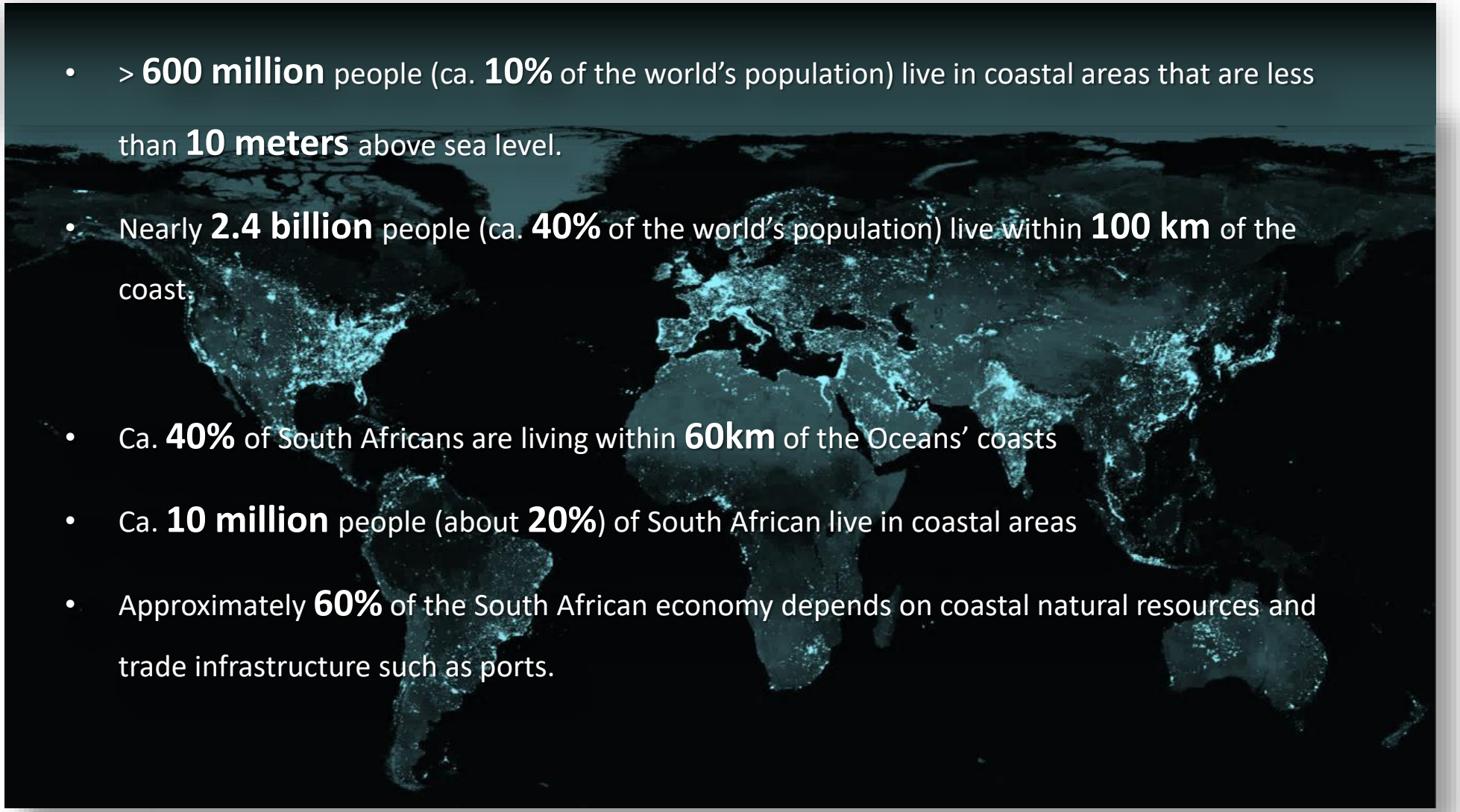
Background



- > **600 million** people (ca. **10%** of the world's population) live in coastal areas that are less than **10 meters** above sea level.
- Nearly **2.4 billion** people (ca. **40%** of the world's population) live within **100 km** of the coast.
- Ca. **40%** of South Africans are living within **60km** of the Oceans' coasts
- Ca. **10 million** people (about **20%**) of South African live in coastal areas
- Approximately **60%** of the South African economy depends on coastal natural resources and trade infrastructure such as ports.

Massive population pressure in SA coastal flood risk zones

2011

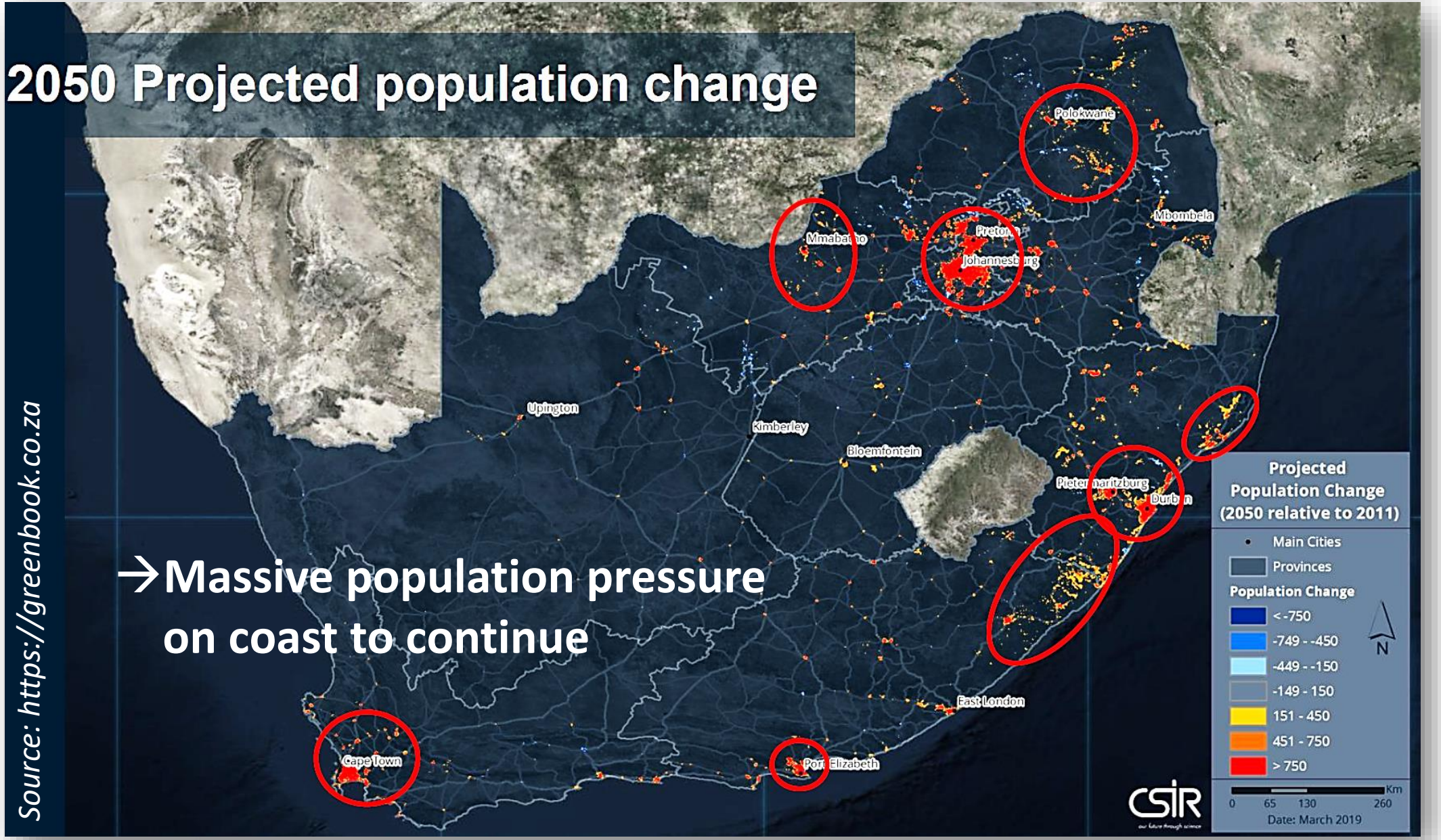
Hazard risk	total	%	NC	WC	EC_urb	EC_trad	KZN_urb	KZN_trad
very high	15	0.002	2	13	-	-	-	-
high	738	0.1	102	585	33	4	14	-
medium	17 044	2.8	467	14 377	1 155	30	989	26
low	106 278	17.2	1 259	73 460	15 700	456	13 464	1 939
very low	494 308	79.9	1 476	353 103	52 343	758	58 116	28 512
TOTAL	618 383	100	3 306	441 538	69 231	1 248	72 583	30 477

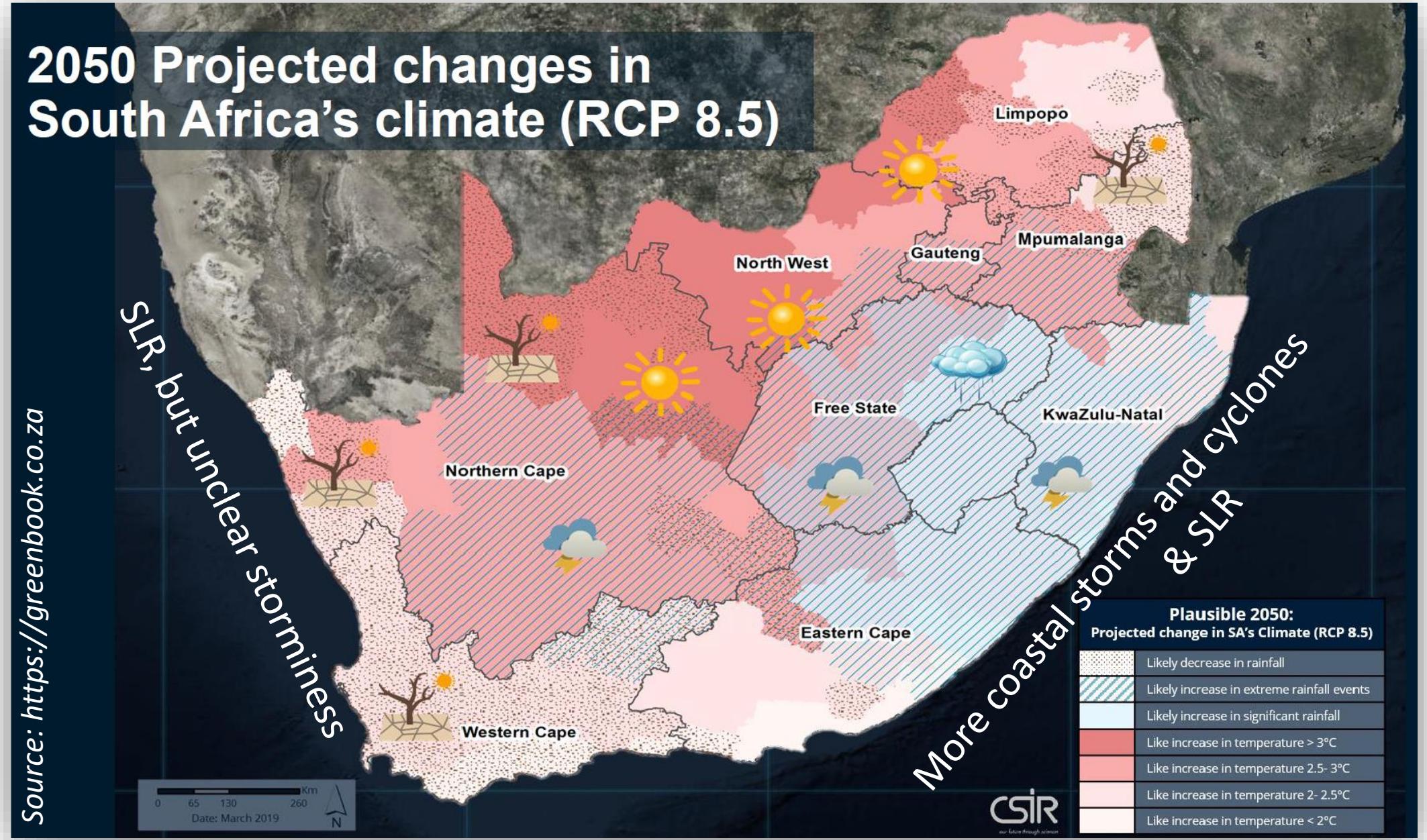
2016

Hazard risk	TOTAL	%	NC	WC	EC_urb	EC_trad	KZN_urb	KZN_trad
Very high	55	0.01	1	52	1	-	1	-
high	1 158	0.1	100	983	60	4	11	-
medium	23 184	2.2	479	19 230	1 969	87	1 401	18
low	161 998	15.3	1 294	114 539	26 524	759	16 298	2 584
very low	873 550	82.4	1 511	655 959	103 347	1 466	69 435	41 832
TOTAL	1 059 945	100	3 385	790 763	131 901	2 316	87 146	44 434

Very high risk zone = Directly affected by SLR

Source: M. Luck-Vogel et al. 2020: National Coastal Assessment for South Africa: Situational Assessment Report.


2050 Projected population change
Source: https://greenbook.co.za
→Massive population pressure on coast to continue
Polokwane
Mbombela
Mmabatho
Johannesburg
Upington
Kimberley
Bloemfontein
East London
Cape Town
Projected Population Change (2050 relative to 2011)
Main Cities
Provinces
Population Change
< -750
-749 - -450
-449 - -150
-149 - 150
151 - 450
451 - 750
> 750
N
Km
0 65 130 260
Date: March 2019



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National Coastal Climate Change Vulnerability Assessment

For SA's 3,000 km of open coast and 300 estuaries assess:

- Future flood risk
  - 1 : 10 yrs + 0.3m SLR
  - 1 : 30 yrs + 0.3m SLR
  - 1 : 30 yrs + 1.0m SLR
  - 1 : 50 yrs + 1.0m SLR
  - 1:100 yrs + 1.0m SLR
- Future erosion risk
  - Long term (Bruun, SLR)
  - Short term (Storm events)

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Package in

Decision Support Tool

(Offline Map Viewer)

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Provide training

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Preview of results

Flood Risk

Erosion Risk

1 - Very low risk
2 - Low risk
3 - Medium risk
4 - High risk
5 - Very high risk

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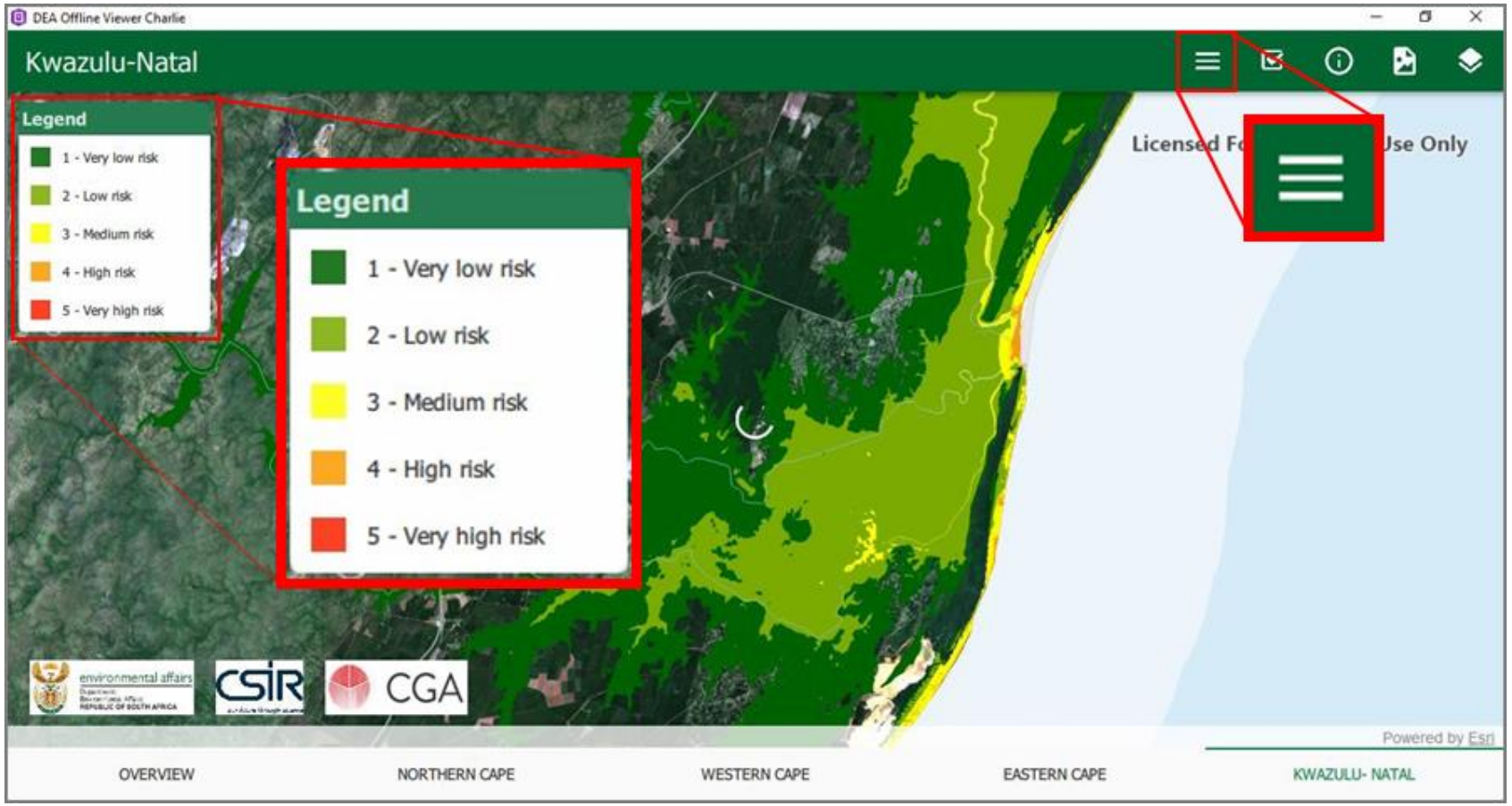
Offline Map Viewer for Decision Support



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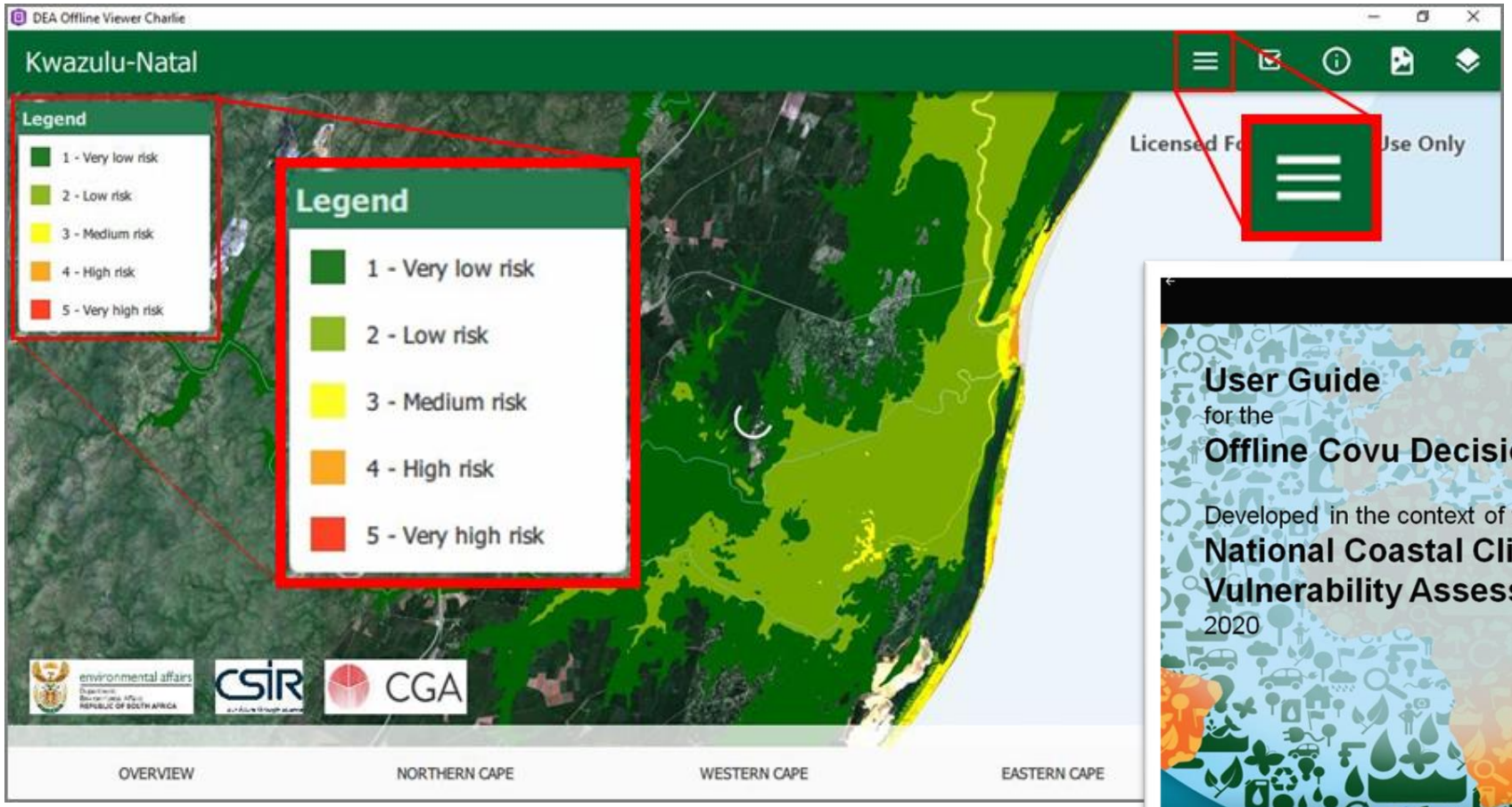

Including Video manual

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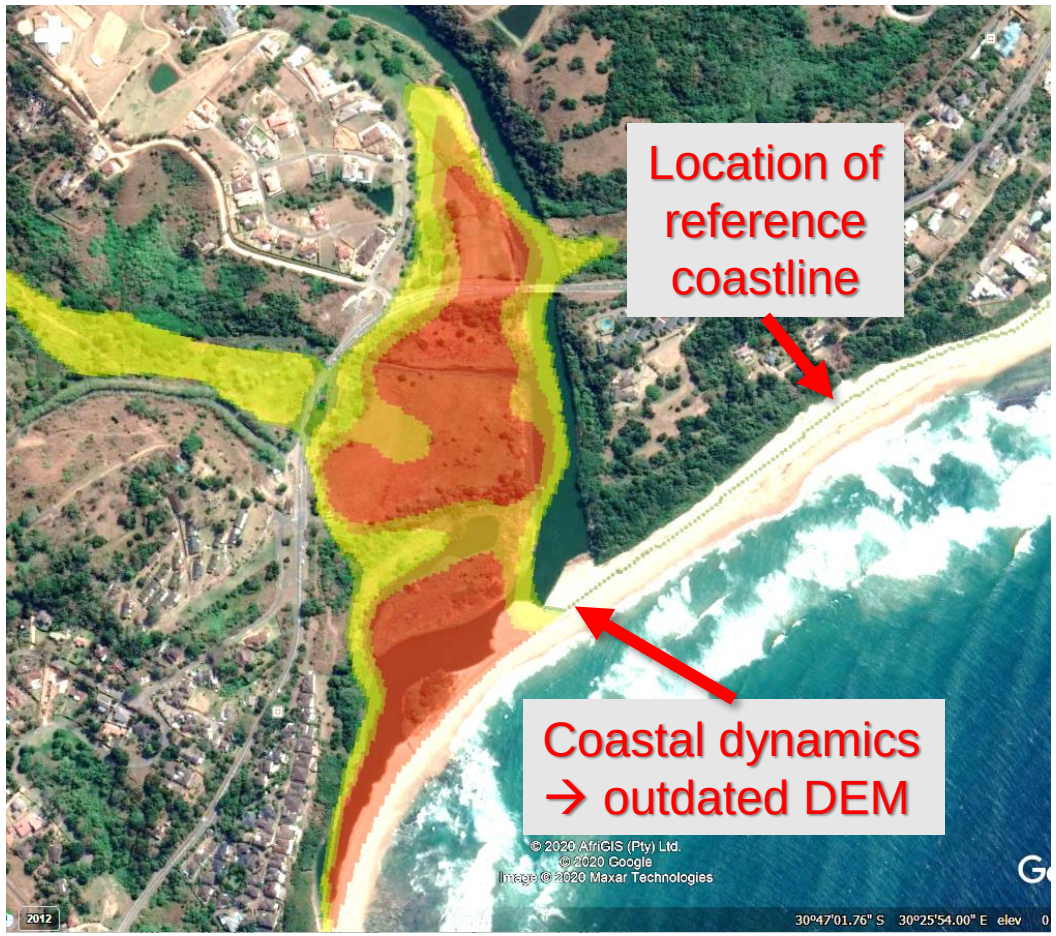
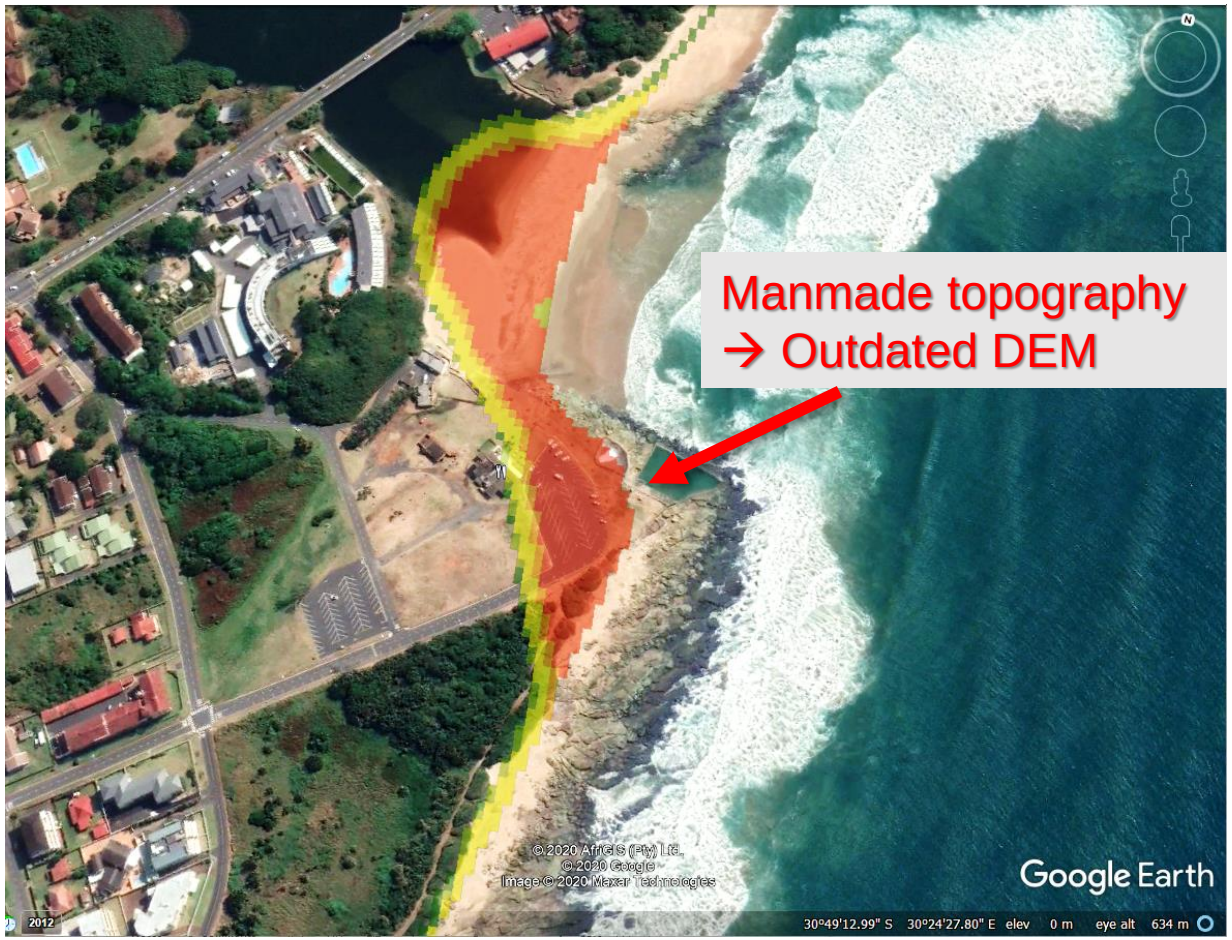
Limitations – largely due to input data constraints





Data release and user training: end November 2020*

- Offline Viewer & Risk layers for download
  at MIMS Data Portal: http://beta.data.ocean.gov.za/

- Risk layers for online viewing
  at DEFF's Coastal Viewer: https://mapservice.environment.gov.za/Coastal%20Viewer/

- ½ day Online Training Workshops for layers and Viewer
  26/27 Nov 2020*, register with NJukuda@environment.gov.za

* Preliminary date

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Thank you

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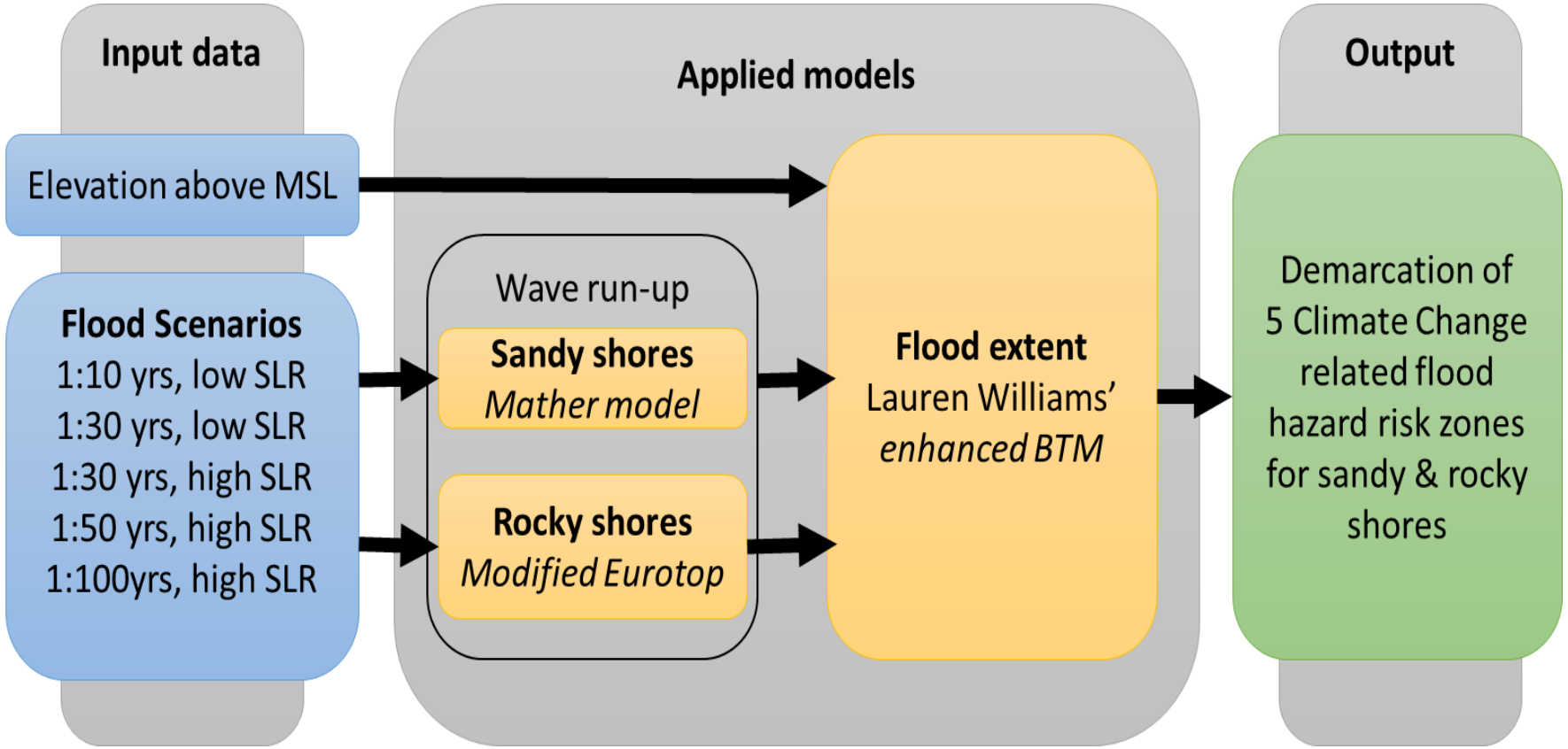
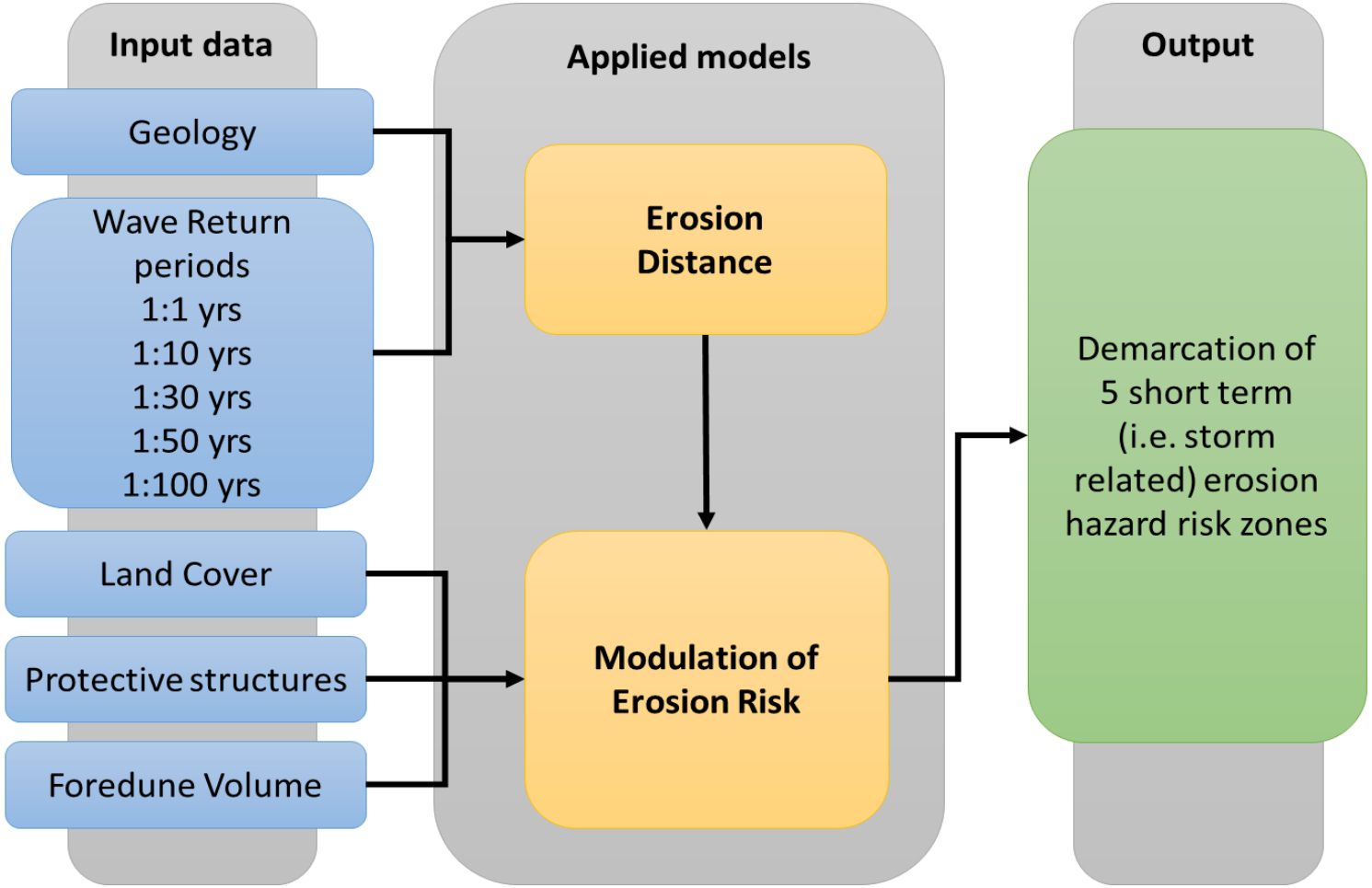
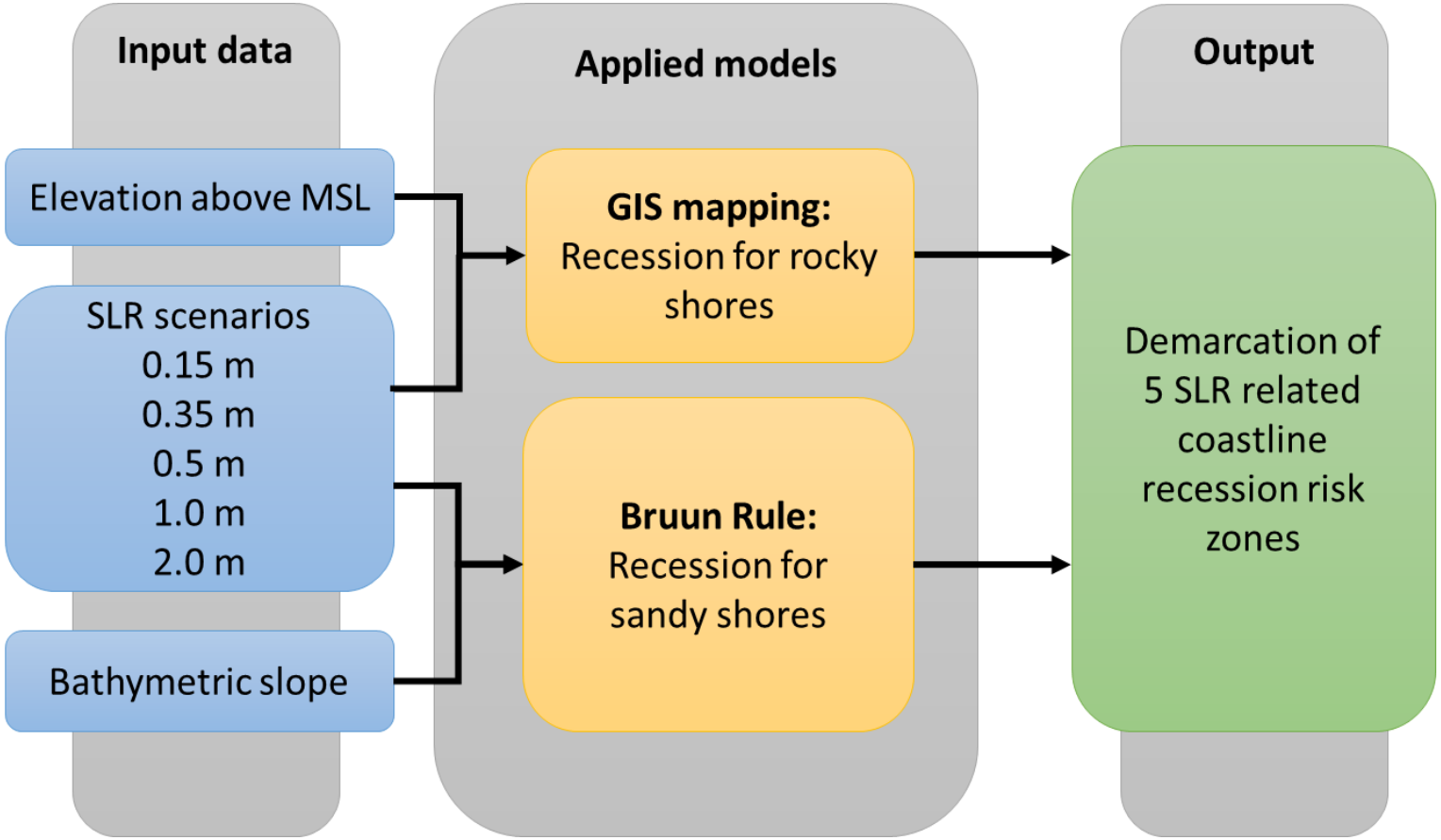
Open Coast Flood modelling approach



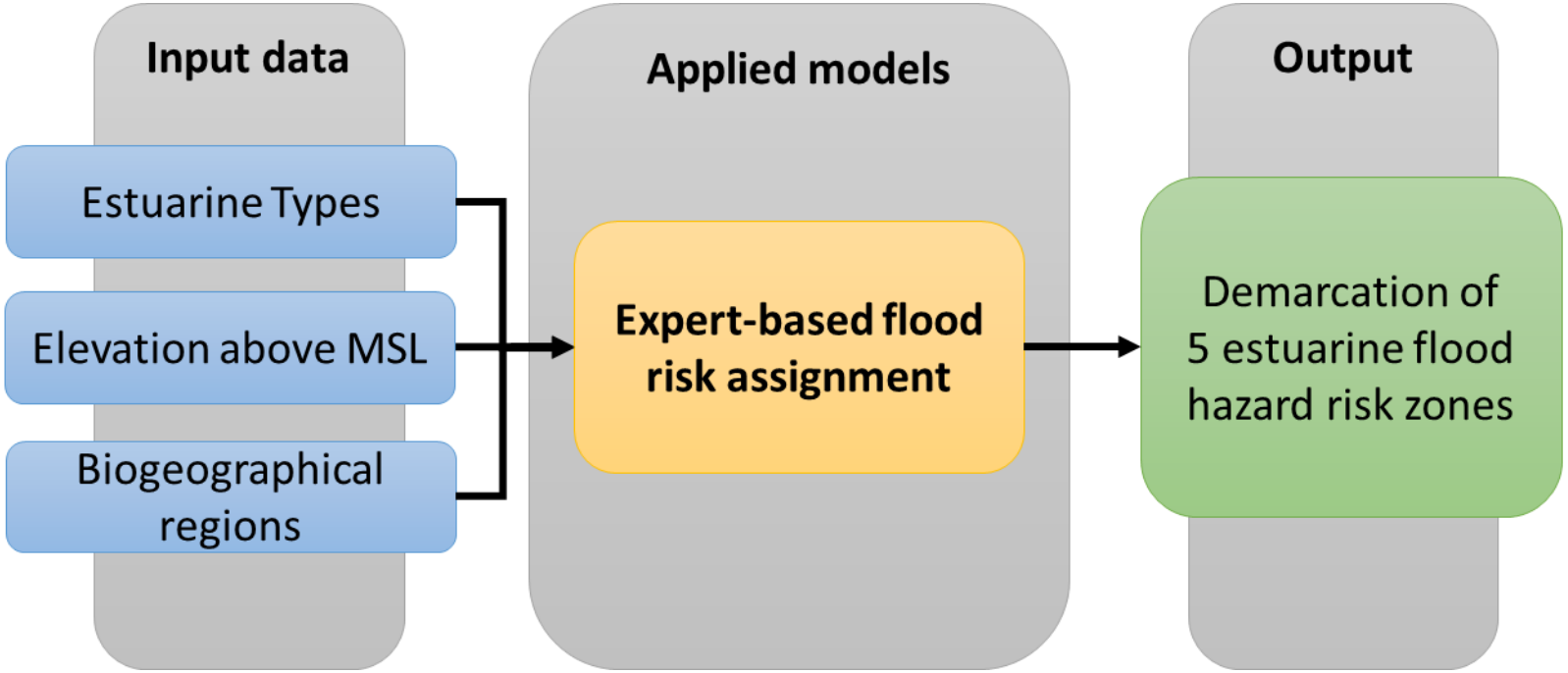
Open Coast Short term erosion approach



Open Coast Long Term Erosion Approach



Estuarine Flood Risk approach



Estuarine Erosion Approach