Assessing Coastal Vulnerability to Extreme Storms: Slapton Sands

MSc Hydrography Dissertation
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About Slapton Sands

- Located in Start Bay on the South Devon Coast with an easterly aspect
- A barrier beach stretching from Strete Head in the north to Torcross Point in the south
- Gravel Beach ($D_{50} = 1.8 – 10\text{mm}$)
- Separates the freshwater Slapton Ley Lake (SSSI) from the sea
- Part of the Village of Torcross occupies the southern end of the barrier
- A379 road runs the length of the barrier
Hindcast Wave Height Data From 2000 to 2016

Graph showing significant wave height over time from January 2000 to November 2015. The graph indicates peaks in wave height, with notable events in 2001 and 2016. The data is visualized with a line graph and includes images of coastal damage associated with these years.
Longshore Transport Resulting from Southerly Storms

Beach Nourishment

• 2015 project
• 27,000 tonnes of shingle Moved
• 3000 Lorry Loads
• Eight Weeks
• £250,000
• Funded by the Environment Agency and Devon County Council
Dissertation Aim

To create a framework which can describe the necessary sea state and beach morphology that will cause wave overtopping of the Slapton Sands barrier beach in Start Bay

Quantify Vulnerability
Methodology

- Beach morphology derived from multibeam sonar and UAV photogrammetry
- Combine surveyed data to create a complete DEM of the supratidal, intertidal and subtidal zones
- Cross shore Morphology sections imported to XBeach-G
Any Questions?