



Arthur Holmes Meeting 2015

Tsunami Hazards and Risks: Using the Geological Record

Draft Field Trip Itinerary

Day 1 - Tuesday 22 September 2015

Arrival at Hotel

1. Late Afternoon

Eshaness, Cliff Top Storm Deposits (CTSD) (HU 207 785)

The cliffs at Eshaness show some of the highest wave-scoured surfaces on Shetland, at up to 40 m OD. Wave-generated cliff-top boulders may comprise individual clasts, spreads and ridges. Storm-generated boulders may extend inland of the limits of modern storm wave wash on to and beneath vegetated cliff-top surfaces. The headland of Grind of the Navir is scoured by waves in major storms that overtop cliffs 15-18 m high. The examination of storm derived boulder deposits allow extreme events in the coastal landscape to be assessed alongside tsunami derived sand sheets that are extensive in the Shetland Islands.

Day 2 - Wednesday 23 September 2015

Travel to Yell (short ferry journey from mainland)

2. Basta Voe

Here a distinctive sand layer enclosed within Holocene peat is described from Basta Voe, Isle of Yell, Shetland Isles. The sand layer, that can be traced considerable distances inland and up to a maximum altitude of c. + 9 m OD, is here interpreted as having been deposited by a former tsunami. AMS dating appears to indicate that the tsunami occurred between 1300 – 1570 cal years BP. At present, the tsunami has no known source mechanism although the most likely mechanism is thought to have been an offshore slump or slide. The available information would presently seem to indicate that this tsunami was restricted to the eastern coastline of Shetland. The relatively young age of this inferred tsunami is of considerable importance to planners and engineers concerned with estimating coastal flood frequency and magnitude.

3. Whale Firth

The extensive tsunami deposits at Whale Firth are exposed for many 10s of km in coastal section. The deposit is locally variable in thickness but can be examined for sediment composition and is characterised by the presence of large quantities of woody macrofossils twigs and branches. The sand deposit is composed of locally coarse to medium grained sands and gravels and can be traced within surrounding hillslopes to a maximum altitude of



8.3m OD.

4. Maggies Kettle Loch

5. Scatsta Voe

Sites 4 & 5 represent the Storegga tsunami in Shetland. The site at Maggies Kettle Loch lies opposite the Sullom Voe Oil Terminal. The deposits comprise sand and gravels which have incorporated extensive intraclasts of the underlying peat deposits ripped up and incorporated within the tsunami deposit. Here the inland run up is at least 20m.

6. Garth Voe

Tsunami deposits at Garths Voe will be demonstrated from sediments located close to coastal lochans. Hand coring allow the examination of deposits across lochs and low-lying marsh environments. Two tsunami deposits are present here, those attributed to the Storegga slide tsunami and a later Holocene tsunami of unconfirmed origin.

