



Exceptional weather events

Type of event:

Flooding / Landslide

Date:

September 2003

Weather in the vicinity of Pollatomish Mountain on 19th September 2003.

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Preceding conditions

August was a warm and dry month with rainfall amounts recorded at Belmullet only 27% of normal (based on the period 1961-1990). For the period 1st to 18th September, rainfall amounts recorded at Belmullet were 122% of normal.

The meteorological situation on 19th was that a cold front with waves off the South coast was slow moving and affecting counties in Munster and Leinster. The situation over Connacht and Ulster was different, with showers developing during the morning and afternoon over land and showers also moving in from the Atlantic during the day. There is evidence of a trough off the northwest coast during the day on the Atlantic surface charts.

The radar pictures show shower activity over Connacht during the morning and afternoon with some intense echoes in one or two places at times (but these intense echoes were not in the vicinity of Pollatomish Mountain). During the morning and afternoon shower activity was due to showers forming over land as well as showers moving in from the Atlantic.

Satellite Images

Satellite thermal infra-red imagery from Dundee at 23:13 hrs shows the shower activity over the Atlantic with a thicker band of shower cloud near the Northwest coast.

Radar Imagery

Radar pictures suggest that whilst there were showers in the vicinity of Pollatomish Mountain during the day, it was not until between approximately 20:00 and 23:00 hours that intense shower activity occurred in this area. This intense activity appears to have been very localised. The individual radar echoes moved very slowly NorthEastwards, but over this critical period in the Pollatomish area a tendency for cumulonimbus (Cb) formation upstream of existing Cb meant effectively that this very local area was under the influence of active Cb for a few hours. Images are available at 15-minute intervals from both Shannon and Dublin weather radars. AN example of the Shannon radar image at 20:47 UTC (21:47 local time) on 19th is attached. The vertical windshear (Northeasterly surface winds, Southwesterly mid-tropospheric winds) probably contributed to this effect. The radar pictures show some further showers overnight, however none were as heavy as in the period 20:00 to 22:46 hours.

Rainfall intensity

The evidence from radar imagery suggest that rainfall amounts in the vicinity of Pollatomish Mountain on 19th would have been much larger than amounts in the vicinity of Belmullet due to the highly localised intensity of the showers. This is in agreement with gauge readings at Belmullet and at Inver N.S (which is approximately 5 miles ENE of Belmullet and 3 miles west of Pollatomish). The total rainfall amount

recorded at Belmullet on the 19th was 5.0mm with 3.6mm falling between 1800 and 2400 hours. Some of these showers were reported as thundery between 2200 and 2400 hours. On the morning of the 20th the total rainfall amounts read at Inver N.S. was 89.3 mm. This value refers to the period 0900 hours on 19th to 0900 hours on 20th, however, most of this fall was probably during the period 2000 and 2400 hours on 19th. Another gauge at Bunnahowen (Muinnachree) which is approximately 6 miles SE of Belmullet recorded a value of 8mm for the 24 hour period up to 0900 hours on 20th.

Quantitative rainfall figures from weather radar carry very large margins of error. An additional problem in the present case is that the nearest radar (Shannon) is more than 180km from the area of interest and, at such a distance earth curvature causes the lower couple of km above the earth surface to be 'invisible'. It can be said, however, that there was an almost stationary intensity peak in the area with instantaneous value greater than 23mm/hour.

From the hydrograph of flow, it has been estimated that there was a runoff in excess of 50mm in the ballinaboy River North of Ballinaboy Bridge during the almost 10 hours ending 08:00 hours on 20th (McGinley, 2003).

In the vicinity of Pollatomish Rainfall amounts of 82 mm would be expected to occur only once every 100 years in a 24-hour period.

General weather conditions in the area

During the morning and afternoon winds reported at Belmullet, were light, mainly southwesterly in direction or calm. However they became North-Northeasterly during the evening and increased to about 15 to 20 knots with gusts of around 30 to 35 knots. Winds may have been stronger with higher gusts in the vicinity of Pollatomish during the period of heaviest rainfall.

There was some sunshine in the morning of 19th, but total for the day was only about 1 hour. Temperature reached a maximum of around 16 Degrees Celsius in the afternoon but were about 11 degrees during the period of heavy rainfall.

Reference

McGinley, H., 2003, "Flooding in the Glengad Region of County Mayo 19 – 20 September 2003, EPA

Attachment

