

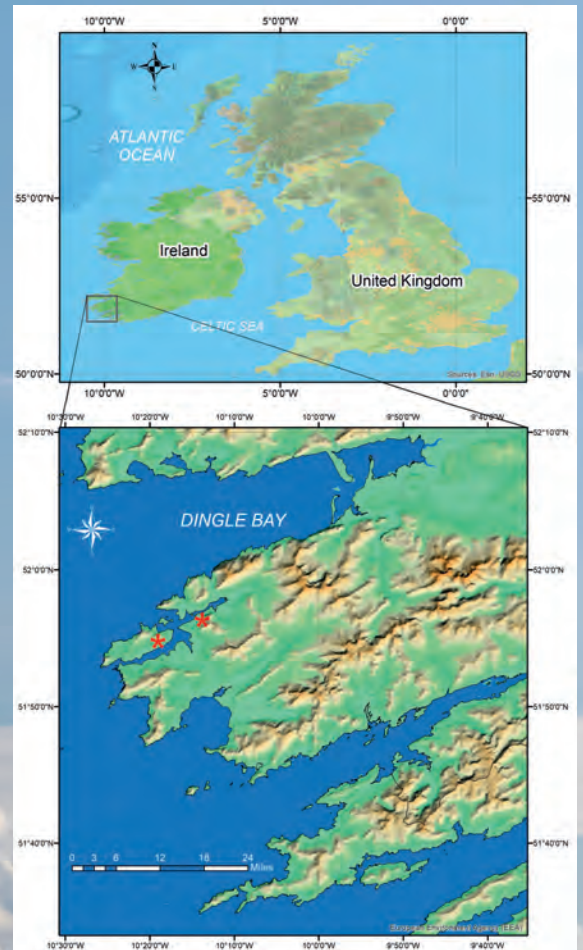
# METEOROLOGY'S EMERALD JEWEL

## Valentia Observatory

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The coastal landscape of Valentia.



Maps indicating Valentia Observatory's two historical locations. The western (left) star indicates the original location of Valentia Observatory while the eastern (right) star indicates the modern location of the observatory.

Just off the rugged west coast of County Kerry in Ireland lies a relatively small island named Valentia. It is a pastured, quiet island dominated by a small windy hill in its center. Most people who visit the island simply pass through it or stay at its small village of Knightstown on their way to a pair of tiny steep rocky crags on its west side known as the Skellig Islands, a wonderful UNESCO World Heritage Site, hand carved by Viking-era monks.

For many, the draw in this area is Skellig Michael, where film producers shot some of the now-iconic scenes in the new Star Wars movies. But for meteorologists, the true wonder of this remote part of Ireland is actually found on the relatively flat, seemingly placid, island of Valentia itself. This is because Valentia was once home to one of the jewels of modern meteorology, the Valentia Observatory.



Little Michael, an island off the west coast of County Kerry in Ireland.



Image of Valentia Island with violent wave crashing at the famed Valentia Lighthouse at Cromwell Point (tour operators note that 9 out of 10 trips to the Skelligs are turned back due to bad weather and/or rough seas).

## Valentia and FitzRoy

The Observatory's initial fame dates to 1860 and the work of the innovative meteorologist Admiral Robert FitzRoy. While some people might recognize that name primarily as that of the illustrious captain of the *H.M.S. Beagle*, the ship associated with Charles Darwin's famed expedition around the world, in the annals of meteorology, Admiral FitzRoy is linked to some of the greatest advances in the field. This is because FitzRoy pioneered the creation of daily weather predictions, which he called by a new name of his own invention—"forecasts."

Before FitzRoy, the primary function of the "Meteorological Department" of the Board of Trade was simply to produce sailing charts that detailed information on which sailing routes were best. Weather prediction up to this time was

accomplished by watching for "weather signs," the subtle changes in animal behavior and environment. When he created the renowned Met Office of Great Britain, the Admiral argued that the greatly improving knowledge of weather and advancements in technology would save lives. In particular, FitzRoy believed that he could reduce or even eliminate the massive loss of life at sea around the coasts of Victorian Britain. But he fought an uphill battle. In 1854, when one governmental official suggested in the English House of Commons that recent advances in scientific theory might soon allow them to know the weather in London "twenty-four hours beforehand," the whole House erupted with laughter. And the situation worsened; between 1855 and 1860, 7,402 ships were wrecked off the European coasts, with a total of 7,201 lost lives. Finally, after a particularly disastrous sinking of a Royal Charter gold ship in 1859, FitzRoy was given the official authority to start issuing storm warnings.

Admiral FitzRoy's primary tool to make those forecasts was linked directly to Valentia Island—the telegraph. As early as 1857, the remote island had been chosen as the European terminus for the first (and subsequent) transatlantic telegraph cable. As noted at the time in a newspaper as the cable was first begun, "Valentia Bay was studded with innumerable small craft decked with the gayest bunting. Small boats flitted hither and thither, their occupants cheering enthusiastically as the work successfully progressed. The cable boats were managed by the sailors of the Niagara and the Susquehanna. It was a well-designed complement, and indicative of the future fraternization of the nations, that the shore rope was arranged to be presented at this side of the Atlantic to the representative of the Queen by the officers and men of the United States Navy, and that at the other side the British officers and sailors should make a similar presentation to the President of the great Republic."

Admiral FitzRoy realized that a quality weather station and telegraph relay at Valentia Island could play a huge role in transmitting his forecasts. With the telegraph network in place, FitzRoy could gather real-time weather data from the coasts at his London office, but importantly, if he thought a storm was imminent, he could then telegraph the specific ports in danger. It was, he said, "a race to warn the outpost before the gale reaches them." Unfortunately, for FitzRoy, his relative lack of success in his forecasting methods (remember that available data collection and meteorological theory were in their very infancy) eventually led to public ridicule. This, together with a resultant deep mental depression (commencing with his wife's death a few years



Map of the 1858 Atlantic Cable route from Frank Leslie's Illustrated Newspaper, August 21, 1858.

earlier) led to his distressing suicide in 1865.

However, because of its important location with regard to both ocean weather and telegraph technology, Valentia remained the focal point for those telegraph weather observations and forecasts. The first weather report from Valentia Island was made for 8 a.m. on October 8, 1860. By 1867, the reports had proven so worthwhile that the Meteorological Committee of the Royal Society ordered that an official weather observatory be constructed on the island.

### Valentia: The Early Years

One of the first (and the longest serving) superintendents of the Observatory was John Edward Cullum. Cullum was instrumental in getting the Observatory properly and efficiently equipped. High on the main hill of the island, he constructed in 1888 a rather massive electrical anemometer on a concrete base connected

by copper wire to the main observatory. The remains, the sturdy foundation, are still known today locally as "Cullum's Cups." According to *Valentia Observatory: A History of the Early Years*, the strange new weather instrument was something of a curiosity for the island residents—and a tempting target. Early in its life, the curious anemometer attracted unwelcome attention, and damage, from local schoolboys who reportedly on several occasions threw rocks at it, harming the precision instrument. However, Cullum solved this peculiar problem by resorting to a higher authority; he asked the parish priest to speak to the whole island congregation about the matter directly from the pulpit—and that "holy" intervention apparently ended the vandalism.

Cullum also oversaw one of the biggest changes to Valentia Observatory. In March 1892, the entire operation of the Observatory was transferred from the island over a distance of a few miles to



OSULLIVAN (LEFT); RANDY CERVENY

J.E. Cullum, superintendent of Valentia Observatory, the remains of the Valentia Observatory's anemometer.



Modern Valentia Observatory

the mainland at its present location outside of the town of Cahersiveen in County Kerry. This was because a beautiful location, Westwood House, suddenly became available upon the death of its owner at the same time as the lease for the old Observatory location was coming due. However, even at the new location, it has retained its illustrious name of Valentia Observatory.

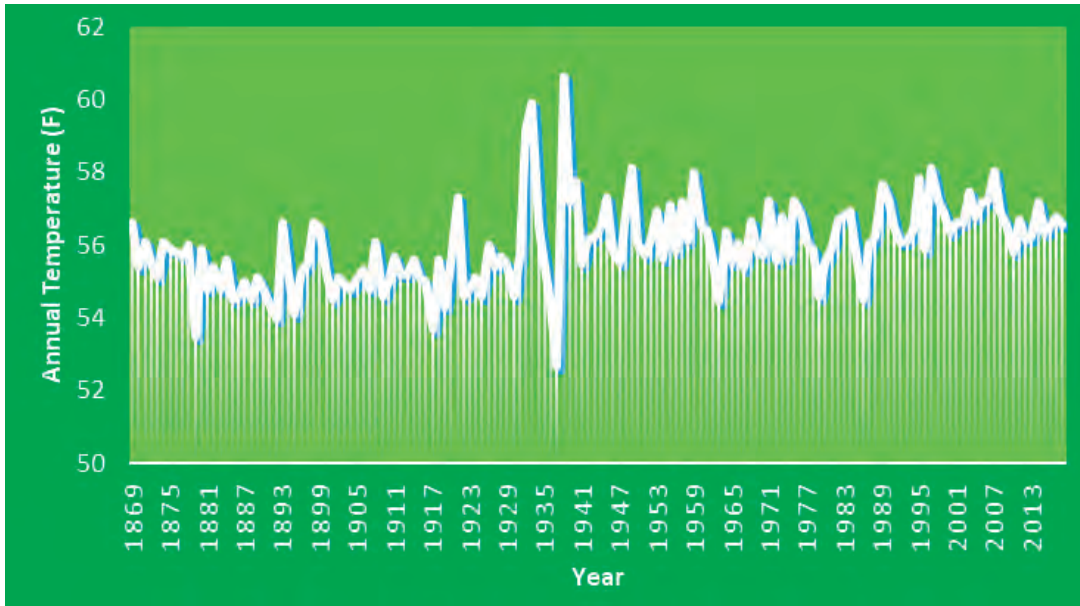
### Devotion to Duty

The British Meteorological Office continued to staff and fund the Observatory until December 1936 when Met Éireann, the Irish Meteorological Service, was established and took over the running of the site. But even during the turbulent times of the Irish War of Independence and the Irish Civil War, the Observatory continued its important work. For example, in August 1922 as the bloody Civil War engulfed the town of Cahirciveen, C.D. Stewart, the Observatory superintendent quite understatedly reported, “On 23<sup>rd</sup> the Irish Free State force took the town of Cahirciveen after some fighting, most of the actual shooting taking place in the vicinity of the Observatory. The whole operation was easily visible from the Observatory windows. The 18h and 21h observations were incidentally rendered extremely unpleasant by the constant crossfire of the two sides” (O’Sullivan, 1992). However, Stewart, a true meteorologist, noted that even what he termed as “extreme unpleasantness” had absolutely no effect on the Observatory’s scientific weather duties, writing “no observation was missed and no record was lost.”

A time series graph of annual records of Valentia Observatory temperatures indicates a slow but persistent warming trend from the Observa-



On February 17, 2018, “Centennial Observing Station” status was commemorated at the Observatory in Cahersiveen, Co. Kerry, Ireland, with the unveiling of a plaque by the President of Ireland, Michael D. Higgins, and the Irish president also helped launch one of the daily radiosondes.



Time series of Valentia Observatory annual temperatures from 1869 to 2018 in degrees Fahrenheit.

tory's early founding in the 1800s. The somewhat high variability in temperatures in the late 1930s and 1940s might be due, in part, to the turmoil caused by World War II and likely changes in instrumentation and recording practices at that time. The Valentia Observatory meteorological record remains one of the longest continuous official temperature records for Europe, and indeed, for the whole world.

## Modern Valentia Observatory

Today, as part of Met Éireann, the Observatory carries out surface weather and upper-air meteorological measurements, as well as a wide range of other scientific activities including ozone monitoring, geomagnetics, seismology, solar radiation, and environmental monitoring. In doing so, it has been honored with a number of "firsts." Valentia Observatory houses the first Irish national solar and terrestrial monitoring facility (with observations beginning in 1954). It is the oldest seismic recording station for Ireland (with observations beginning in 1962). Since 1965, it has contained an International Phenological Garden which monitors phase changes of plants—information critical in the study of climate change. For more than 30 years, it has monitored stratospheric ozone levels over Ireland, as well as concentrations of tropospheric pollutants. Beyond fulfilling its national and international role within Met Éireann, the Ob-

servatory has been involved in many projects with other scientific bodies both in Ireland and abroad, such as the Dublin Institute of Advanced Studies, the World Meteorological Organization Global Atmospheric Watch, and the European Monitoring and Evaluation Programme.

Given such incredible devotion to the atmospheric sciences, it is not surprising that in 2018 the World Meteorological Organization awarded Valentia Observatory the highly honored status of "Centennial Observing Station" in recognition of over 100 years of long-term continuous and accurate weather observations.

Perhaps Eoin Moran, Director of Met Éireann, stated it best when he said, "Valentia Meteorological and Geophysical Observatory ... has been 'taking the pulse of the planet' every day for more than 150 years as part of a global effort to forecast the weather and monitor our climate. The work carried out at Valentia represents a highly significant national contribution to the science of meteorology and our capacity to forecast the weather and assess changes in the state of the Earth's climate." **W**

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