History of Meteorological Observations in Ireland

Séamus Walsh

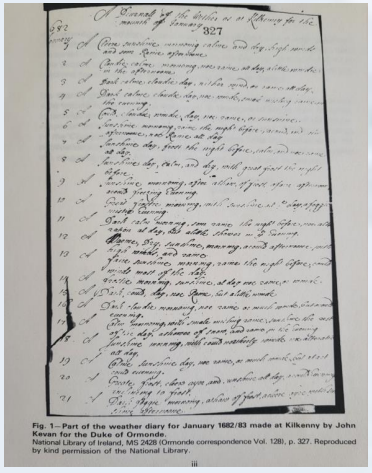
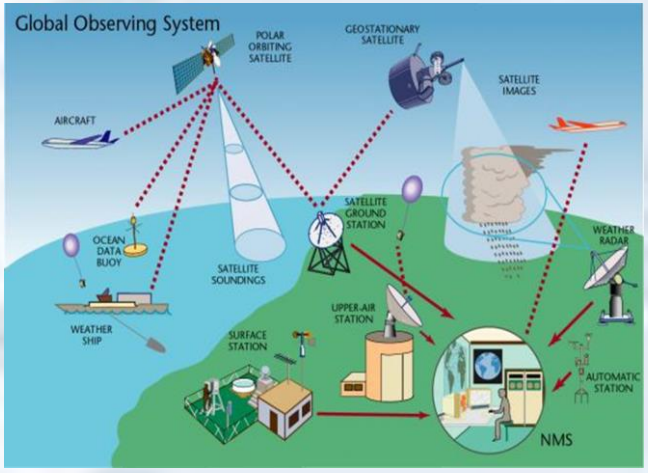


Fig. 1—Part of the weather diary for January 1682/83 made at Kilkenny by John Kevan for the Duke of Ormonde.
National Library of Ireland, MS 2428 (Ormonde correspondence Vol. 128), p. 327. Reproduced by kind permission of the National Library.



Annals and Dairies….pre 17th century

Annals – Various reference to Irish Weather and Climate, Earliest mention of Meteorological event in Ireland or Great Britain

Irelands Natural History, Boate(1652) Earliest published account of Irish Weather & Climate

Earliest Weather Diary by John Kevan, for the Due of Ormond at Kilkenny

A good deal of information relating to the weather in Ireland, may be collected from Ware's Annals. The following are extracts :

" A.D. 1171 This winter the English soldiers, by the scarcity of provision, and change of air and diet, contracted several distempers, and many died.

" 1172 A very tempestuous winter, the king having stayed three months in Dublin.

" 1192 This likewise may seem worth the remembering, that this year there were so great tempests in Desmond, that many houses and churches were beaten down, and much cattle and men destroyed.

" 1209 The city of Dublin, by reason of some great mortality, being waste and desolate, the inhabitants of Bristol flocked thither to inhabit.

" 1247 The same year, saith Florilegus, there was a marvellous and strange earthquake over England, but saith Feleon, over Ireland, and all the west of the world; and there followed immediately a continual intemperature of the air, with a filthy skurf, the winter stormy, cold, and *wet*, which continued until the 11th of July, and put the gardeners, fruiterers, and husbandmen, void of all hope, insomuch that they complained *that winter was turned to summer, and summer to winter*, and that they were like to lose all, and be undone.

" 1326 The earth received fruitfulness, the air temperature, and the sea calmness.

" 1348 This year there was great mortality in all places.

" 1361 About Easter, began a great mortality of men, but few women in England and Ireland.

" 1370 There was a third pestilence in Ireland.

" 1383 The fourth great pestilence was in Ireland.

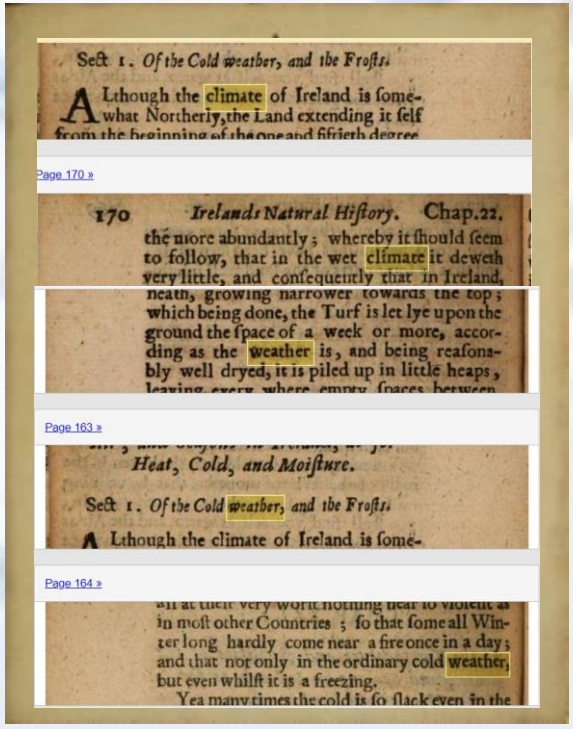
" 1486 March, there happened so great a storm of wind and rain, that trees were pulled up by the roots, and many houses, and some churches, were blown down to the ground.

" 1489 This summer proving very pestilent and feverish, many people died.

" 1491 This year was commonly called by the natives, the dismal year, by reason of *the continual fall of rain all the summer and autumn*, which caused great scarcity of all sorts of grain throughout Ireland.

" About the latter end of December, after the appearance of a blazing star, which shone for some days, a certain grievous and pestilential sickness, commonly called the English sweat, began first to afflict this nation.

" 1492 There was so great a drought this summer, throughout Ireland, that many rivers were almost dried up, the cattle dying every where with thirst; also soon after



Sect 1. *Of the Cold weather, and the Frosts.*

Although the climate of Ireland is some-what Northerly, the Land extending it self from the beginning of the one and fiftieth degree

Page 170 »

170 *Irelands Natural History.* Chap. 22.

the more abundantly; whereby it should seem to follow, that in the wet climate it doeth very little, and consequently that in Ireland, heath, growing narrower towards the top; which being done, the Turf is let lye upon the ground the space of a week or more, according as the weather is, and being reasonably well dryed, it is piled up in little heaps, leaving every where empty spaces between

Page 163 »

Heat, Cold, and Moisture.

Sect 1. *Of the Cold weather, and the Frosts.*

Although the climate of Ireland is some-

Page 164 »

in most other Countries; so that some all Winter long hardly come near a fire once in a day; and that not only in the ordinary cold weather, but even whilst it is a freezing.

Yea many times the cold is so slack even in the

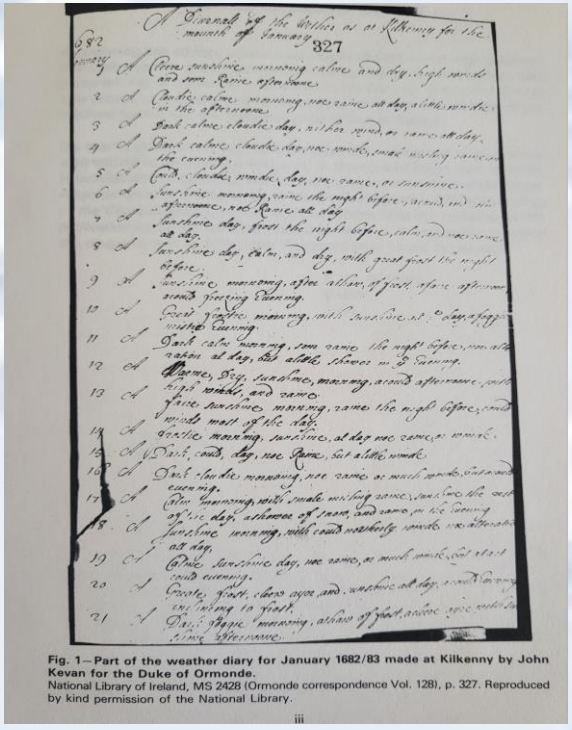


Fig. 1—Part of the weather diary for January 1682/83 made at Kilkenny by John Kevan for the Duke of Ormonde.
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17th and 18th Century Developments

1600

1640s Barometer

1700

1714 Fahrenheit First Mercury Thermometer

1742 Celsius Scale

17th and 18th Century Developments

1600

- 1640s Barometer

1700

- 1714 Fahrenheit First Mercury Thermometer
- 1742 Celsius Scale
- Various Weather Journals (from 1687)
- 1774 Birth of Admiral Beaufort, Navan
- 1787 First Scientific measurement, Dublin
- 1796 Armagh Observatory

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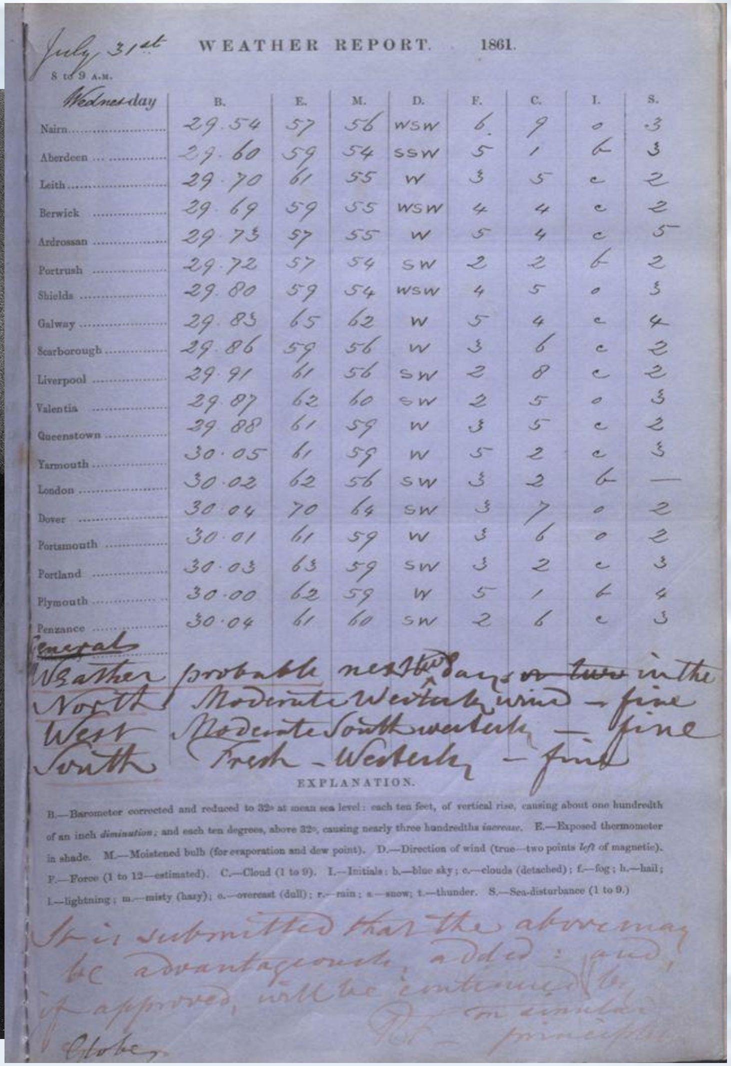
19th Century Developments

1800

- 1830s and 1840s Morse Code and Telegraph
- 1853 1st International Meteorological Conference
- 1854 forerunner UKMO formed under Admiral Fitzroy
- 1859-1861 Royal Charter storm, First forecast



July 31st WEATHER REPORT. 1861.

8 to 9 A.M.

Wednesday	B.	E.	M.	D.	F.	C.	I.	S.
Nairn	29.54	57	56	WSW	6	9	o	3
Aberdeen	29.60	59	54	SSW	5	1	b	3
Leith	29.70	61	55	W	3	5	c	2
Berwick	29.69	59	55	WSW	4	4	c	2
Ardrossan	29.73	57	55	W	5	4	c	5
Portrush	29.72	57	54	SW	2	2	b	2
Shields	29.80	59	54	WSW	4	5	o	3
Galway	29.83	65	62	W	5	4	c	4
Scarborough	29.86	59	56	W	3	6	c	2
Liverpool	29.91	61	56	SW	2	8	c	2
Valentia	29.87	62	60	SW	2	5	o	3
Queenstown	29.88	61	59	W	3	5	c	2
Yarmouth	30.05	61	59	W	5	2	c	3
London	30.02	62	56	SW	3	2	b	—
Dover	30.04	70	64	SW	3	7	o	2
Portsmouth	30.01	61	59	W	3	6	o	2
Portland	30.03	63	59	SW	3	2	c	3
Plymouth	30.00	62	59	W	5	1	b	4
Penzance	30.04	61	60	SW	2	6	c	3

General Weather probable next two days ~~or two~~ in the

North Moderate Westerly wind – fine

West Moderate South westerly – fine

South Fresh – Westerly – fine

EXPLANATION.

B.—Barometer corrected and reduced to 32° at mean sea level: each ten feet, of vertical rise, causing about one hundredth of an inch *diminution*; and each ten degrees, above 32°, causing nearly three hundredths *increase*. E.—Exposed thermometer in shade. M.—Moistened bulb (for evaporation and dew point). D.—Direction of wind (true—two points *left* of magnetic). F.—Force (1 to 12—estimated). C.—Cloud (1 to 9). I.—Initials: b.—blue sky; c.—clouds (detached); f.—fog; h.—hail; l.—lightning; m.—misty (hazy); o.—overcast (dull); r.—rain; s.—snow; t.—thunder. S.—Sea-disturbance (1 to 9.)

It is submitted that the above may be advantageously added

19th Century Developments

1800

- 1830s and 1840s Morse Code and Telegraph
- 1853 1st International Meteorological Conference
- 1854 forerunner UKMO formed under Admiral Fitzroy
- 1859-1861 Royal Charter storm, First forecast
- 1860 Valentia Observatory
- 1873 &1879 1st & 2nd International Congresses on Meteorology
- 1880s Standardisation, Stevenson Screen

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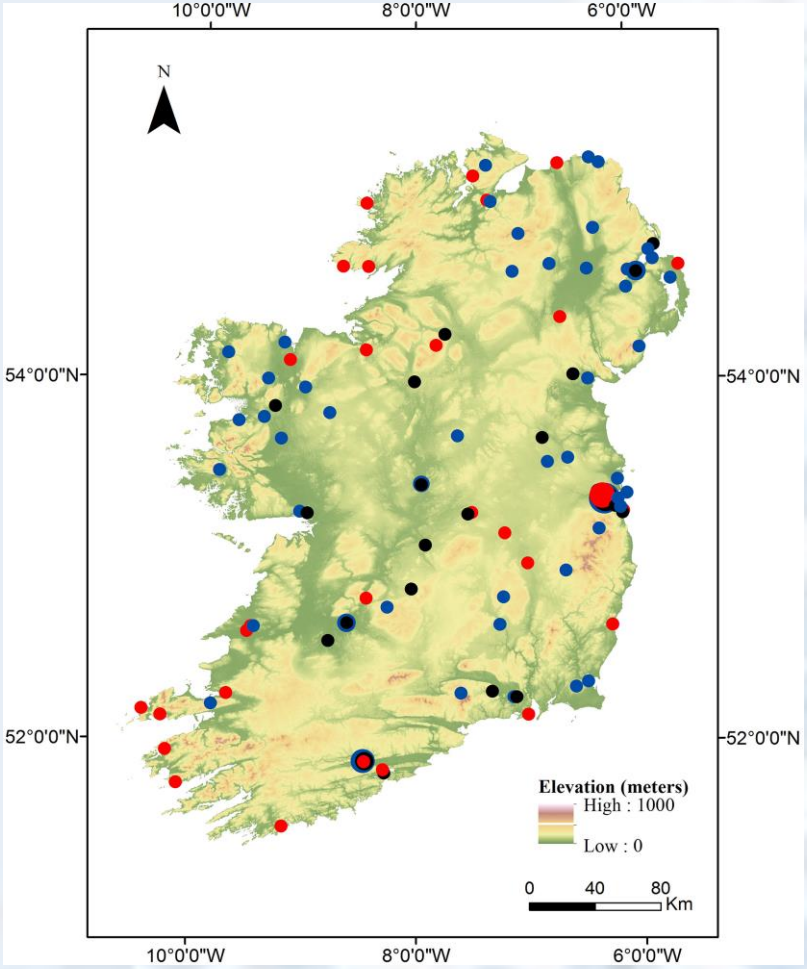
THE ROBINSON ANEMOMETER.



Location of instrumental meteorological records pre-1850 inclusive. Observations include maximum and/or minimum thermometers (red) and thermometer (blue) among other instrumental records and other instrumental data (black). Mateus(2021)

Irish Met Society

1800s

Number of Observing stations steadily increased during the century

From 1860 to 1900 the number of rainfall stations increased from 13 to almost 200

Botanic Gardens 1800
Markree Castle 1824
Phoenix Park 1829
Birr Castle 1872
Roches Pt 1873
Malin Head 1888

The weather keepers

Some of Ireland's early weather stations were linked to scientific institutions such as the Ordnance Survey, the Botanic Gardens and the centres for astronomy at Armagh, Birr and Markree. Others were maintained by individuals. The rainfall network, led by G.J. Symons in London, was almost exclusively run by volunteers. It expanded from 13 Irish stations in 1860 to almost 200 by 1900 and included men and women, clergymen, industrialists, academics and others who routinely took rainfall measurements as a leisure pursuit.

National Botanic Gardens, Co. Dublin
Weather records have been taken here since 1800. *Image source: National Botanic Gardens Library.*

Banbridge, Co. Down
J. Smyth, Jun. Esq. voluntarily managed three rainfall stations in the Bann Valley in the 1860s. The linen industry relied heavily on water-powered mills.

Roches Point, Co. Cork
W. Kennedy recorded the first weather observation in July 1873, noting 'thick weather'.

Birr Castle, Co. Offaly
From 1874 until 1878 observations were taken by the famous astronomer John Louis Emil Dreyer (1852–1926). *Image source: Armagh Observatory.*

Blacksod Point, Co. Mayo
Joseph Hodge, Chief Boatman recorded the first weather observations on 25 September 1899.

Valentia Observatory, Co. Kerry
On 8 October 1860, Ireland's first 'real time' weather observation was transmitted via telegraph from Valentia Island.

Inistogue, Co. Kilkenny
Rainfall readings were taken at Woodstock Estate by Rt. Hon. W.F. Tighe and Lady Louisa Tighe from 1865 until 1899. *Image source: Kilkenny County Library.*

Markree Castle, Co. Sligo
From 1874 until 1876 observations were taken by a Danish lady named Anna Doberck. *Image source: University of Cambridge, Institute of Astronomy.*

Malin Head, Co. Donegal
The first weather readings were taken at the Telegraphic Reporting Station in 1888. *Image source: National Library of Ireland.*

Below: The Leviathan of Parsonstown, Birr Castle (1886) *Source: University of Cambridge, Institute of Astronomy.*

Credit: Mairead Treanor &Met Éireann

Irish Met Society

'The Female Touch'

Anna Doberck

The observations illustrated here were taken by a woman of Danish origin, named Anna Doberck. Anna's name appears on the Markree records from 1874 to 1876. Her records are distinctive because she draws the prescribed weather symbols in the notes field more frequently than other observers. For example,

▲ for hail • for snow

Why was a lady of Danish origins recording observations in County Sligo in 1876?

Anna Doberck's brother, William, was an acclaimed astronomer and he was in charge of the Markree Observatory from 1874 to 1882. Anna assisted William at the observatory.

It was while the Dobercks were at Markree that our record lowest air temperature was recorded; that is -19.1°C (-2.3°F) on 16th January 1881.

William Doberck

Anna Doberck drew prescribed symbols to record weather information.

Anna Doberch

'Typhoon Annie'

The Hong Kong Connection

In 1882, the Dobercks left Markree for Hong Kong, when William was appointed Director of the new Hong Kong Observatory.

Ten years later, in 1892, Anna was appointed Assistant Meteorologist in the same institution – only after lengthy negotiations with the Colonial Office.

Anna's appointment was noted in the journal *Nature* Vol. 46 (108) 1892, where she was misidentified as Dr. Doberck's daughter.

Anna remained at the Hong Kong Observatory until her retirement in 1915. Part of her role in Hong Kong was to visit ships in port to excerpt weather observations from their navigation log books. Because of the nature of her work, she was nicknamed 'Sampan Annie' or 'Typhoon Annie'.

The lowest air temperature ever recorded in Ireland was -2.3F, 16th January 1881.

View of Hong Kong Harbor, 1860-1870. Marciano Antonio Baptista (1828-1896).

Hong Kong Observatory 1913

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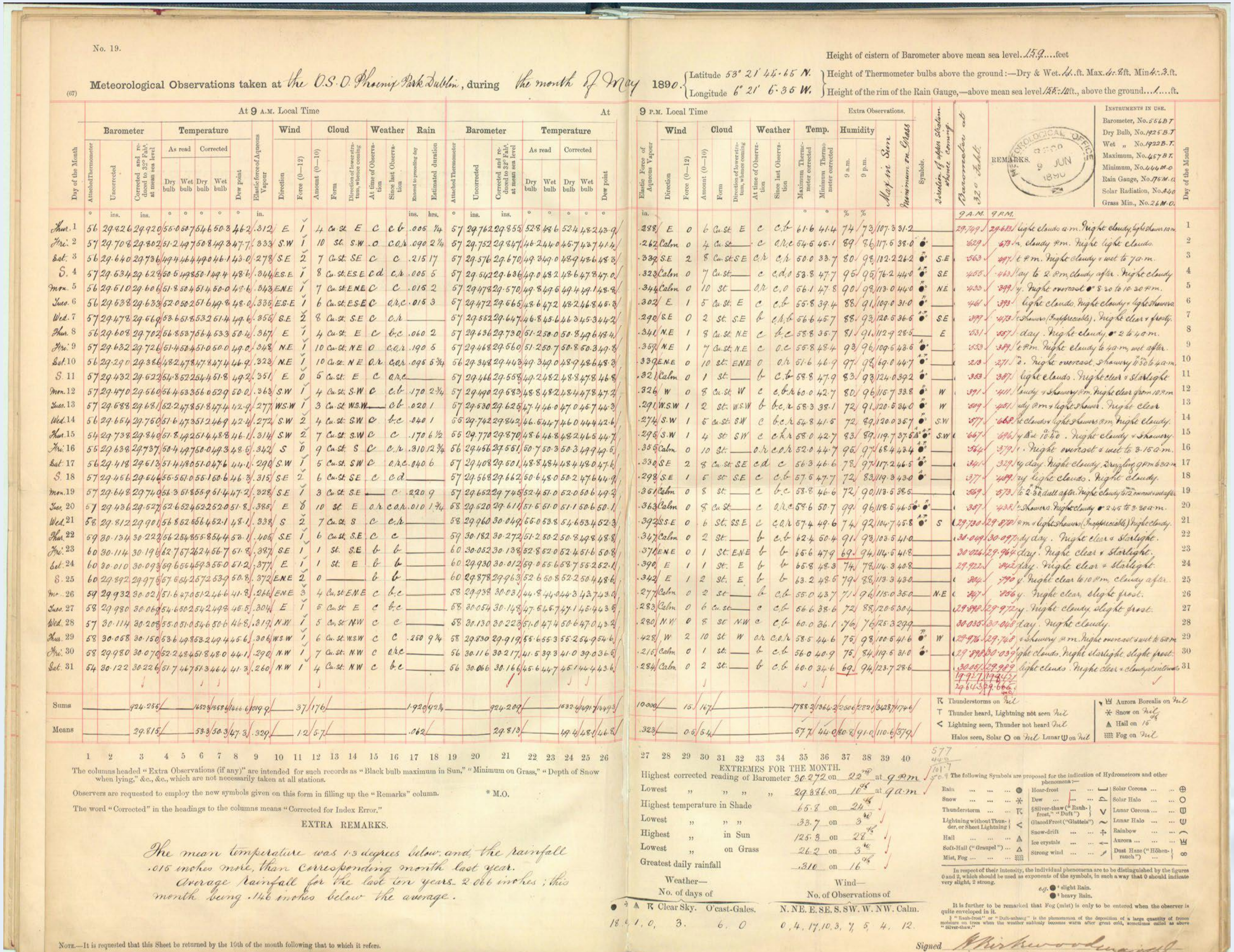
Meteorological Registers



No. 19.

(67) Meteorological Observations taken at *the O.S.O. Phoenix Park Dublin*, during *the month of May* 1890. Latitude *53° 21' 46.65 N.* Longitude *6° 21' 6.35 W.*

Height of cistern of Barometer above mean sea level *159*....feet
Height of Thermometer bulbs above the ground:—Dry & Wet *4* ft. Max. *4.8* ft. Min. *4.3* ft.
Height of the rim of the Rain Gauge,—above mean sea level *155.12* ft., above the ground...*1*...ft.

At 9 A.M. Local Time — At 9 P.M. Local Time

Instruments in use. Barometer, No. *556 B.T.* Dry Bulb, No. *1925 B.T.* Wet " No. *1922 B.T.* Maximum, No. *457 B.T.* Minimum, No. *4460* Rain Gauge, No. *1761* Solar Radiation, No. *440* Grass Min., No. *26 M.O.*

The columns headed "Extra Observations (if any)" are intended for such records as "Black bulb maximum in Sun," "Minimum on Grass," "Depth of Snow when lying," &c., &c., which are not necessarily taken at all stations.

Observers are requested to employ the new symbols given on this form in filling up the "Remarks" column. * M.O.

The word "Corrected" in the headings to the columns means "Corrected for Index Error."

EXTRA REMARKS.

The mean temperature was 1.3 degrees below, and the rainfall .015 inches more, than corresponding month last year. Average rainfall for the last ten years 2.066 inches; this month being .146 inches below the average.

EXTREMES FOR THE MONTH.

Highest corrected reading of Barometer	*30.272*	on *22nd*	at *9 p.m.*
Lowest " " "	*29.386*	on *10th*	at *9 a.m.*
Highest temperature in Shade	*65.8*	on *24th*	
Lowest " " "	*33.7*	on *3rd*	
Highest " in Sun	*125.3*	on *27th*	
Lowest " on Grass	*26.2*	on *3rd*	
Greatest daily rainfall	*.310*	on *16th*	

Weather— No. of days of	●	▲	☈	Clear Sky.	O'cast.	Gales.
	18	*1*	*0*	*3*	*6*	*0*

Wind— No. of Observations of	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm.
	0	*4*	*17*	*10*	*3*	*7*	*5*	*4*	*12*

Note.—It is requested that this Sheet be returned by the 10th of the month following that to which it refers.

Signed *[illegible]*

20th Century

1900s

1903 Wright Brothers
First flight, Aviation takes off!

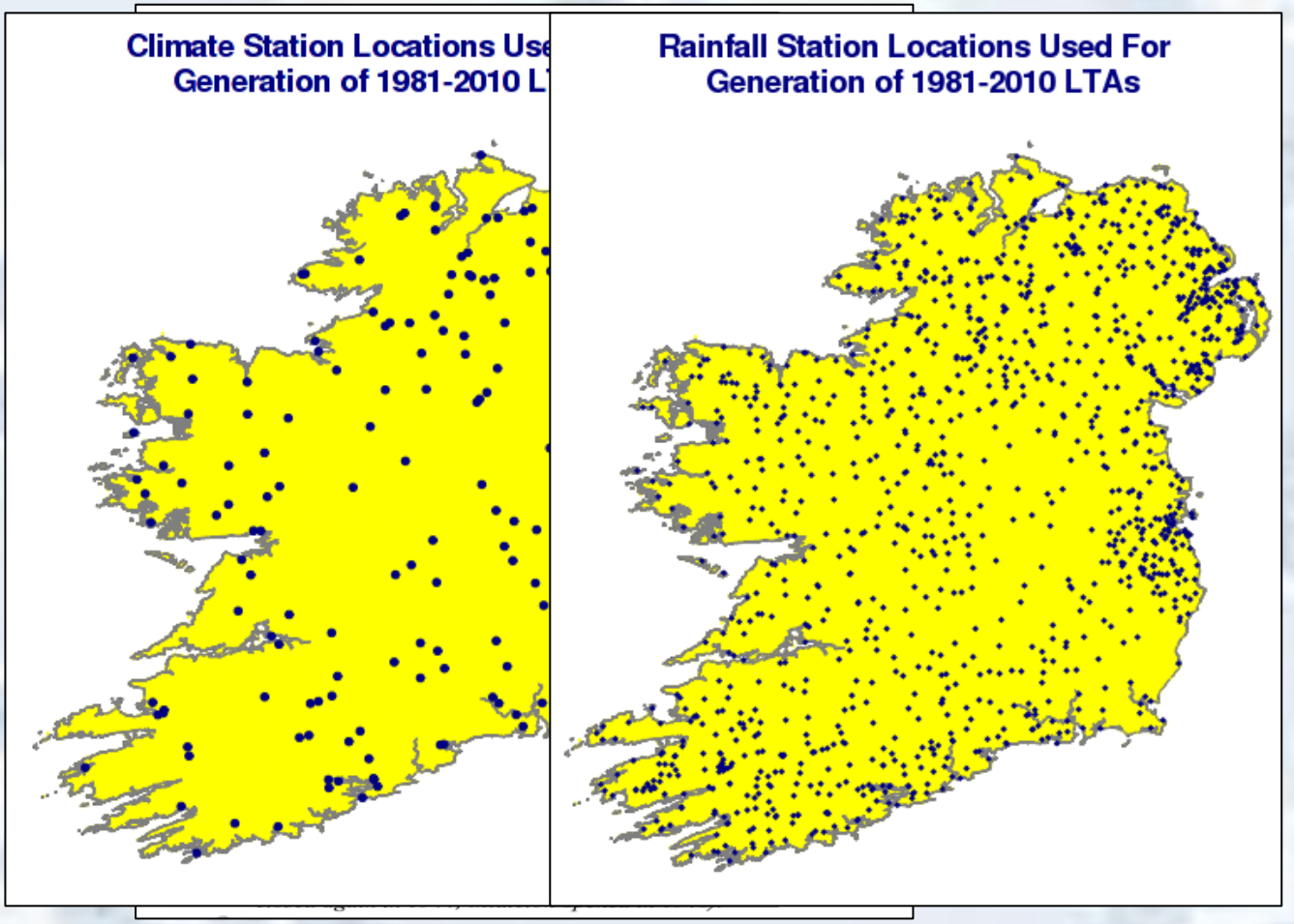
1936/37 Irish Meteorological Service established

1937

20th Century

1900s

- 1903 Wright Brothers First flight, Aviation takes off!
- 1936/37 Irish Meteorological Service established
- 1940>> Networks Expanded
- 1950 World Meteorological Organisation Formed
- 1950s and 1960s Weather Radar arrived
- 1960 First Meteorological Satellite TIROS-1
- 1970s>> Automation, Digitisation
- 1990s>> The Internet



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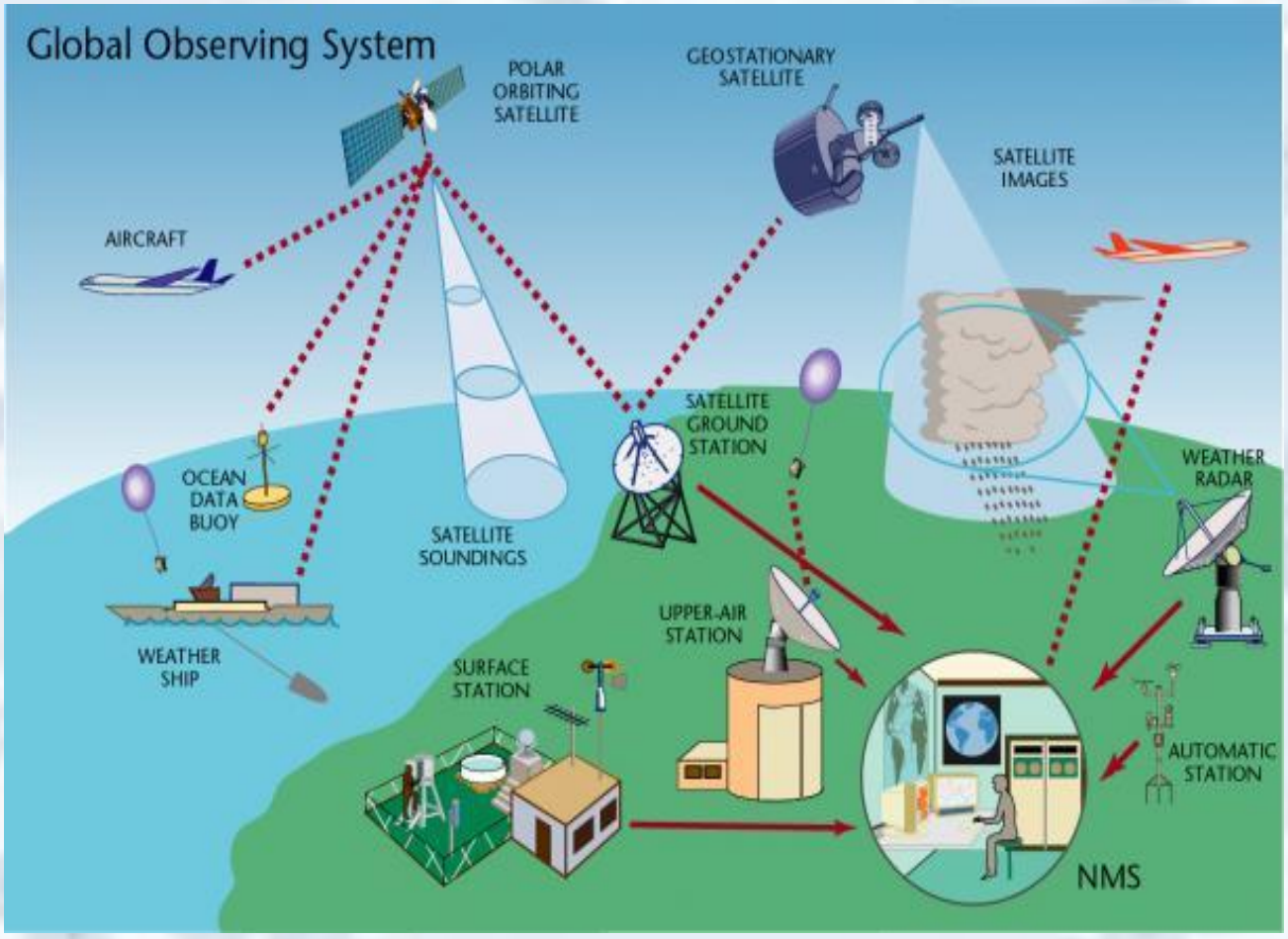
21st Century

2000s

- 2003-2012 Automation of Synoptic Network TUCSON
- 2016-2020 Automation of Climate Network CAMP
- Real time data availability
- Next generation Satellite & Radar
- **Crowdsourcing**
  Internet of Things IoT
  Smart phones
  Smart cars etc



Special Thanks to Mary Curley and Liam Newman

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