



Meteorologisk
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150 år

New self-descriptive naming convention for observations and climate data

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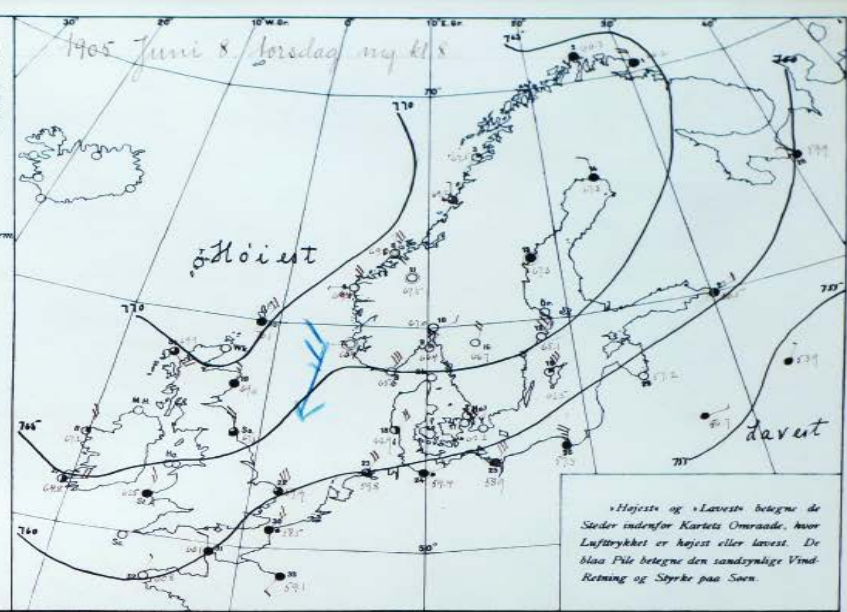
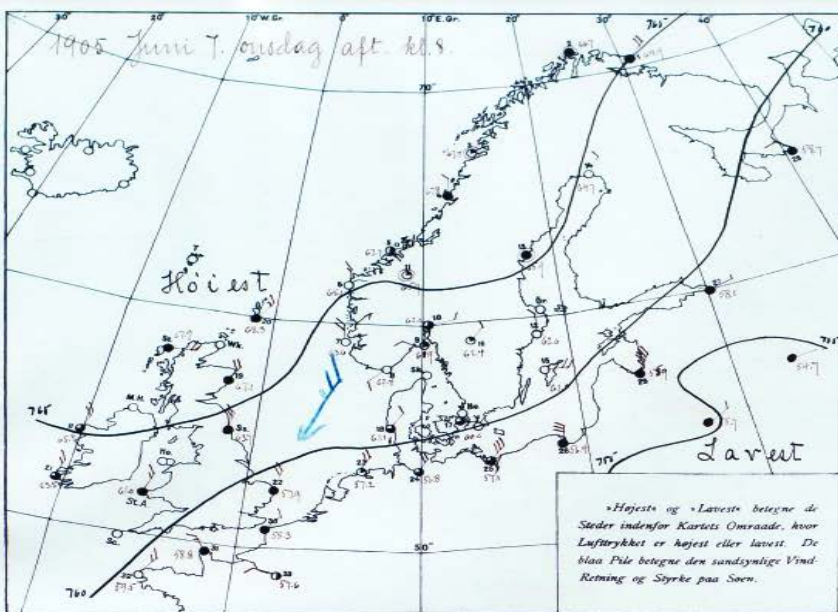
1762 – First observation station

1866 – Met Norway was established

100 year with precipitation observations



What did they observe?



Almindelig Oversigt.

Onsdag d. 7. Juni 1905 Aften. Torsdag d. 8. Juni 1905 Morgen. Torsdag d. 8. Juni 1905 Kl. 8 Morgen.

Station.	Barometer ved 10' af Havet. Millimeter. (Sensitivitet)	Luftens Tempers. ter. Celsius.	Vind.		Vejr.
			Retning retvendt	Styrke 0-6.	
Varde	764.9	2.0	NO	2	oversk
Bode	674	7.0	0	0	halvkl
Christiansund	673	9.9	OSO	1-2	halvkl
Skudenes	636	11.1	NV	2	klart
Oxe	624	15.0	SV	1	klart
Færder	619	15.6	NV	1	klart
Christiania	625	16.9	OSO	1	klart
Stockholm	626	9.8	N	1	klart
Hernesand	659	8.0	—	0	oversk
Haparanda	647	7.4	NO	1	klart
Wisby	610	10.0	0	2	klart
Karlstad	624	16.0	NO	2	klart
Kjøbenhavn	606	14.9	OSO	1-2	klart
Fans	611	13.0	NO	1	klart
Aberdeen	673	10.0	NO	2	oversk
Dunrossnes	683	8.3	NO	1-2	oversk
Valentia	635	13.3	NO	1	klart
Yarmouth	679	11.7	NO	2	oversk
Borkum	672	15.1	NO	2	klart
Hamburg	668	14.9	NO	2	klart
Swinemünde	671	11.9	NO	3	klart
Neufahrwasser	664	15.0	NO	3	oversk
St. Petersburg	681	10.7	OSO	0-1	oversk
Archangelsk	687	6.6	NV	1	oversk
Riga	659	13.5	NO	4-5	klart
Cap Gris-Nez	683	12.0	NO	1	oversk
Cherbourg	695	12.0	NO	1-2	klart
St. Mathieu	645	12.6	NO	1-2	klart
Paris	670	13.9	NV	1	halvkl
Ljungevar	667	9.2	—	0	oversk
Björns	679	6.6	N	1	oversk
Flora	650	10.9	N	1-2	klart
Oslo	657	7.8	—	0	klart

Høiest lufttryk i PM, lavest i OSO. Sørnherst.

de nordlige til nordøstlige vinde med for det meste smukt vid og nogenlunde normale temperaturforhold. Meget duggigt ved A britiske kyster, siden vi lig i vor farvand. Minim. minutemp. i Kristiania i nat 10°C, maksimumtemp. i nat 21°C.

Udgifter: Tørt veir.

Veirvarsel fra St. Hanshaugen: Tørt veir.

Station	Barometer ved 10' af Havet. Millimeter. (Sensitivitet)	Barometriske Siget (i) Fald (-) i foregående 12 Timer. Millimeter.	Luftens Tempers. ter. Celsius.	Vanddampens ter. Millim.	Relativ Fugtigh. Procent.	Vind.		Vejr.	Sø.
						Retning retvendt	Styrke 0-6.		
1 Varde	766.2	+1.3	8.0	4.3	76	N	4	oversk	2
2 Gjesvær	663	+0.8	7.2	4.8	64	SSO	1	oversk	2
3 Bode	675	+0.1	7.8	5.3	67	SV	0-1	klart	1
4 Brans	672	+1.4	6.9	5.1	70	N	0-1	klart	1
5 Christiansund	634	+1.2	8.9	5.8	68	NO	2-3	klart	2
6 Florø	633	+1.3	11.8	5.5	52	V	0-1	klart	1
7 Skudenes	653	+1.8	11.5	8.4	83	—	0	klart	1
8 Oxe	656	+3.2	14.0	7.1	69	NO	2	klart	3
9 Færder	662	+4.5	12.6	6.4	69	NO	1	klart	2
10 Christiania	670	+4.8	13.8	5.4	44	OSO	1	klart	—
11 Dovre	675	+1.8	7.6	4.8	61	—	0	klart	—
12 Stockholm	671	+2.5	11.5	4.2	41	NO	3	klart	—
13 Hernesand	673	+1.4	9.2	7.0	84	—	0	oversk	—
14 Haparanda	673	+2.6	6.5	4.0	65	N	1	oversk	—
15 Wisby	625	+1.5	8.8	6.4	76	NO	3	klart	—
16 Karlstad	667	+4.3	10.7	5.8	63	NO	2	klart	—
17 Kjøbenhavn	662	+1.0	12.4	7.0	64	NO	2	klart	—
18 Fans	624	+1.8	13.4	8.4	69	NO	2	halvkl	—
19 Aberdeen	694	+2.5	9.4	6.9	79	NO	1-2	oversk	2
20 Dunrossnes	701	+1.8	8.4	5.4	68	NO	1-2	oversk	4
21 Valentia	645	+1.3	12.8	6.8	61	NO	2	klart	3
22 Yarmouth	694	+2.0	12.2	10.0	95	NO	3	klart	5
23 Borkum	698	+2.0	14.1	8.2	69	NO	2	klart	3
24 Hamburg	694	+2.6	12.4	8.0	74	OSO	1	klart	—
25 Swinemünde	684	+1.9	11.0	5.1	61	NO	3	oversk	4
26 Neufahrwasser	673	+0.9	12.1	4.4	64	NO	2-3	oversk	—
27 St. Petersburg	680.5	+1.4	10.7	4.3	63	OSO	0	halvkl	—
28 Archangelsk	684	+2.3	4.5	—	—	—	0-1	oversk	—
29 Riga	672	+1.3	13.4	—	75	NO	0-1	klart	—
30 Cap Gris-Nez	685	+0.2	12.4	10.1	96	NO	1-2	oversk	—
31 Cherbourg	681	+1.3	12.0	9.2	89	NO	1	oversk	—
32 St. Mathieu	668	+1.2	10.6	4.0	95	OSO	0-1	klart	—
33 Paris	681	+1.5	12.0	4.3	60	SV	1	oversk	—

**METADATA IS A
LOVE NOTE
TO THE FUTURE**



Why new standard?

- MET Norway's systematic short codes, examples:
 - RR – precipitation (06 -06)
 - **TAM** – **m**ean temperature (18 -18) 2m
 - FF – 10 min mean wind force, 10 m (different time resolutions)
 - _12 for 12 hours
 - sensors in different levels for few stations have X1... as name

- Codes are short, but not intuitive and not complete

- The future is now..

Which standard to use

No common (international) name convention for climate data

- WMO - codes
- Bufr - element names
- CF standard names

“All” Met institutes have made their own naming convention:



FINNISH METEOROLOGICAL INSTITUTE




Federal Office of Meteorology and
Climatology MeteoSwiss



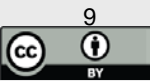
Norwegian Meteorological Institute

CF convention

- Used for NetCDF
 - Commonly used format
- Guidelines
- Forum
- Process for including new standard names



The screenshot shows a web browser window with the address bar containing the URL: `cfconventions.org/Data/cf-standard-names/34/build/cf-standard-name-table.html`. The browser's address bar also shows "Mest besøkt" and "Kom i gang" buttons. The main content of the page is titled "CF Standard Name Table" in a large, bold, black font. Below the title, it says "Version 34, 13 June 2016". The text continues with a reference to the "Guidelines for Construction of CF Standard Names" and a section titled "A note about units". This section explains that canonical units are usually the SI units, which are physically equivalent to the standard units. It also references "Section 1.3 of the CF conventions" and "Udunits documentation". At the bottom of the page, there is a "Search" section with a search input field, a "Search Standard Names" button, and radio buttons for "AND" (selected) and "OR (separate search terms with spaces)", along with a checkbox for "Also search help text".



What can be the element ID?

1. Use existing standard_name
2. Construct new standard names
3. Use cell_method
4. Sort out attributes for a time - serie and metadata to the data



100 year with precipitation observations



They observed a sum of precipitation amount over time

`sum(precipitation_amount T24H)`

T1M, T10M, T1H, T3H, T6H, T12H, T24H, 1M, 3M, 1Y

Examples; standard_name

New id; standard_name	Legacy
air_temperature	TA
temperature_in_surface_snow	TSS
precipitation_amount	RRVIPP
surface_air_pressure	PO
wind_speed	FF
wind_speed_of_gust	FG
soil_temperature, <i>sensor_level = 0, .., 9750</i>	TJ0, .., TJ9750
sea_surface_wave_significant_height	HW

Examples; cell_method

New element_id	Legacy
mean(air_temperature T24H) max(air_temperature 1M) max(mean(air_temperature T24H) 1M)	TAM (diurnal) TAX (month) TAMX (maximum value for a day in a month)
change_over_time(surface_air_pressure T6H)	PP:Barometric tendency
change_over_time(surface_snow_amount T24H)	SAE:Snow depth change
from_direction(sea_surface_swell_wave_first_mean_height T10M)	DW1:Direction of swell system 1
max(wind_speed T1H) from_direction_of_max(wind_speed T1H)	FX DX: Wind direction (FX)

Examples; NEW

New	Legacy
weather_type_manually_observed	WW(code table: present_weather)
over_time(weather_type_manually_observed _additional1 T6H)	WD1(code table: past_weather_additional)

Status

- 302 element id's
 - 185 CF names
 - 117 New names
 - (cover 458 legacy codes, ~100 remains)
- ~173 330 timeseries are covered
- 97 % of the data in Climate database
- Some special data-series (as METAR) are not yet covered



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With
self-explanatory metadata
we hope to bridge between
sciences, applications,
stakeholders and end users.



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Thank you for your attention!

Questions or comments?

Send to solfrida@met.no or hanneh@met.no

REST- API in JSON

```
"data for element": [  
  {  
    "id": "air_temperature",  
    "name": "Air temperature",  
    "description": "Air temperature  
at time of observation at 2 m height.",  
    "unit": "degree_Celsius",  
    "legacyMetNoConvention": {  
      "elemCode": "TA",  
      "category": "Temperature",  
      "unit": "degree_Celsius"  
    },  
    "cfConvention": {  
      "standardName": "air_temperatur  
      "unit": "kelvin",  
      "status": "cf28"  
    }  
  }  
]
```

