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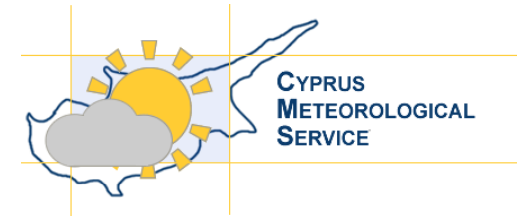
Abstract ID: 201

Monitoring weather and climate in the Cyprus Meteorological Service

Cyprus Meteorological Service has a long history in meteorological observations with the first known observations starting back in 1866 and since 1967 Cyprus Meteorological Service has the responsibility to provide services and information regarding the weather and the climate to all the active social and economic sectors in Cyprus.

The main activities of Cyprus Meteorological Service are to operate a network of meteorological stations in the free part of Cyprus and to collect the necessary data, to issue weather forecasting reports for Cyprus, to provide meteorological services for the needs of the civil aviation, to issue special weather reports and warnings for the sea area of Cyprus for navigation purposes, to analyze, sort and publish meteorological data, to publish studies for the weather and climate and to provide meteorological information for the needs of agriculture, industry, tourism, water management, renewable sources of energy, climate studies and constructions.

Therefore, Cyprus Meteorological Service operates a dense network of stations covering spatially the free part of the island. Furthermore, the Service digitizes and makes quality control of the data collected and then stores them and makes calculations through the ENVIS database system, ensuring thus the quality of services provided to all sectors of the island.



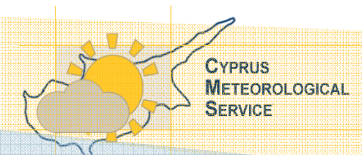
Monitoring weather and climate in the Cyprus Meteorological Service

Filippos S. Tymvios

In the eastern Mediterranean..



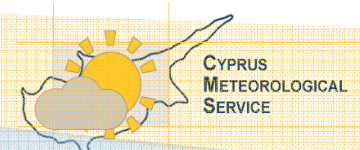
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The Cyprus Island



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CYPRUS
METEOROLOGICAL
SERVICE

History..

- 1866: First meteorological observations carried out by the British Vice Consul of Cyprus
- 1878: Cyprus under British Administration
- 1881: Installation of the first climatological stations in the main cities of the island, measuring mainly temperature and precipitation
- 1902: Installation of new climatological stations, reaching the number of 36
- 1931: 7 climatological and 60 precipitation stations in operation. The Health Service had the responsibility for the met observations until 1945 when they handed over to the Public Works Department
- 1957: The responsibility for the met observations was handed over to a Met Office under the Secretary for Natural Resources
- 1961: Expansion of the network of stations, 28 climatological and 90 precipitation stations in operation
- 1967: Establishment of the Meteorological Service by appointing a scientist in the office
- 1968: A specialist from WMO organizes the Met Service
- 1970: Decade of intensive development by the implementation of a long term plan
- 1974: The Met Service has no access to 11 climatological and 35 precipitation stations located in the occupied by Turkish troops part of the island
- Since then and up to now, Cyprus Meteorological Service has 2 Offices in Larnaka and Paphos airports to provide met services to civil aviations, 1 Radiosonde Station for upper air met observations at Nicosia, the Head Office in Nicosia and a dense network of stations covering spatially the free part of the island

Automatic stations



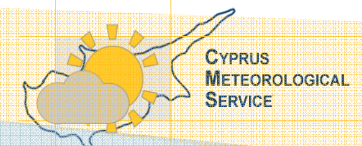
Athalassa station

- ▶ Observations : 0600Z–1800Z (manual and auto)
 - Cloud coverage, type and amount, base height, sunshine
 - T,Td,Wind direction / Windspeed, /Windrun
 - Pressure
 - Rainfall
- ▶ Radiosondes :0600Z, 1200Z (Vaissala)
- ▶ Actinometric (Kipp & Zonen, Cambell Scientific, every minute)
 - Total, direct and diffuse components of global and par radiation
 - IR(upwards/downwards)
 - UVA, UVB, (full spectrum UVA, UVB and 5 specific UV wavelengths for research purposes)

Athalassa station



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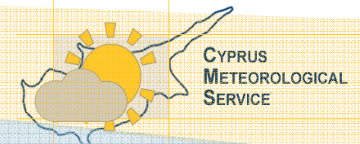
Larnaka and Paphos

- ▶ Two identical automatic stations located near the runways (both locations) and a manual observation system for cross checks
- ▶ Full observations 0000Z–2400Z
 - Cloud coverage, amount, type and height of cloud bases
 - T, Td, Wind direction / Windspeed, /Windrun
 - Pressure
 - Visibility (observer, RVR, MOR)

Kykkos site

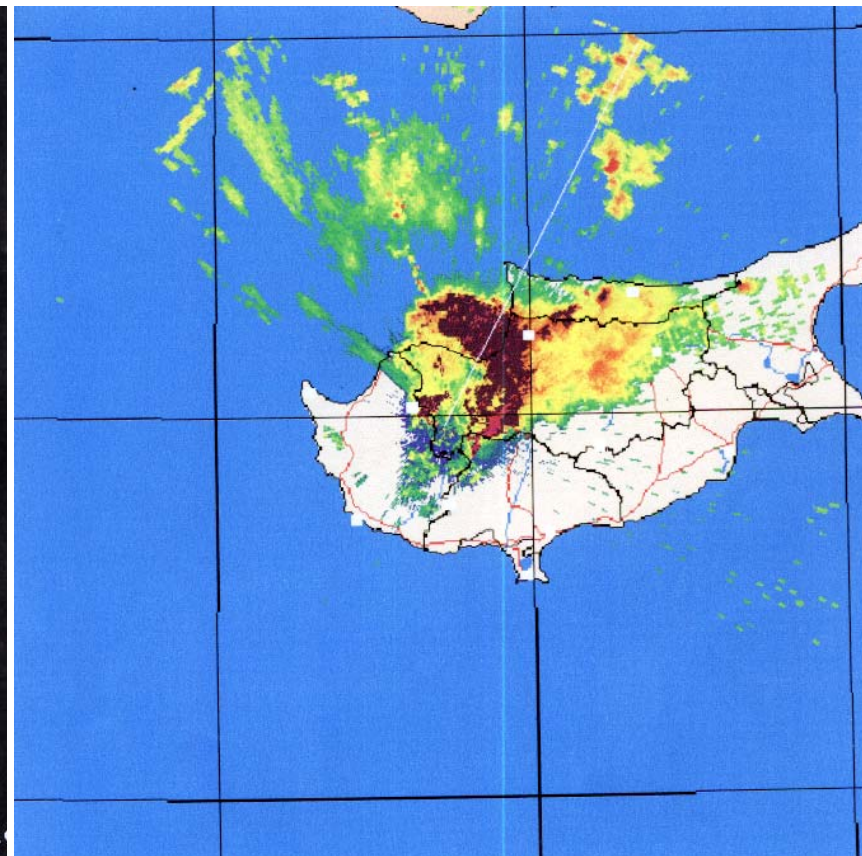
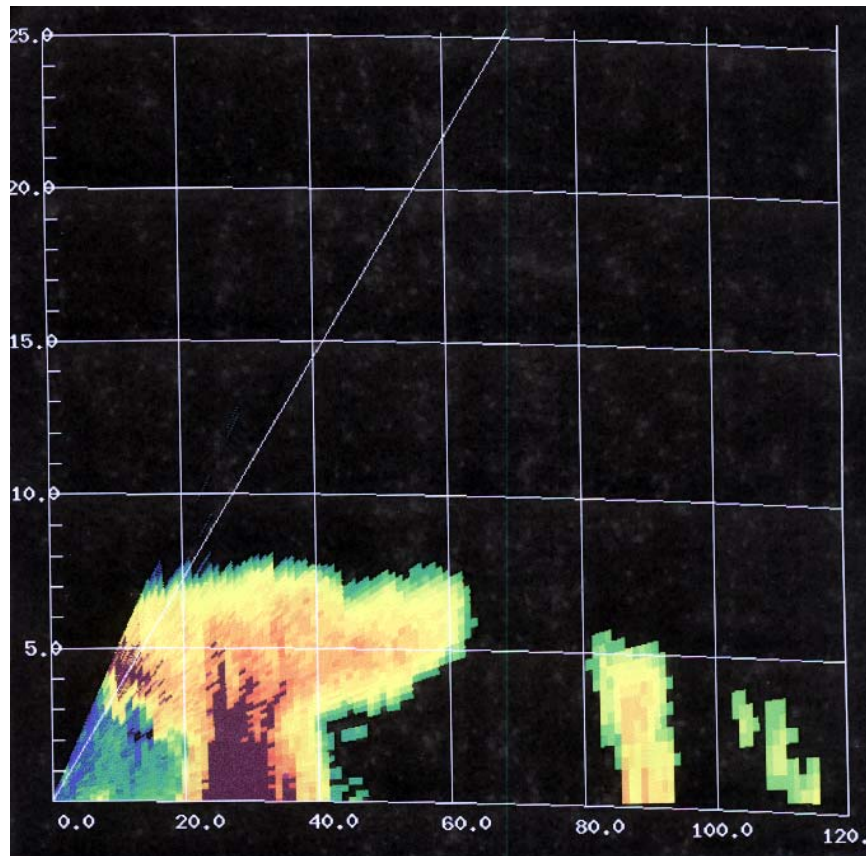


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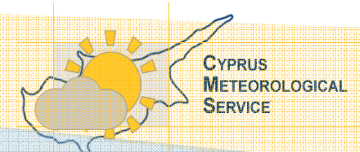


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Radar output

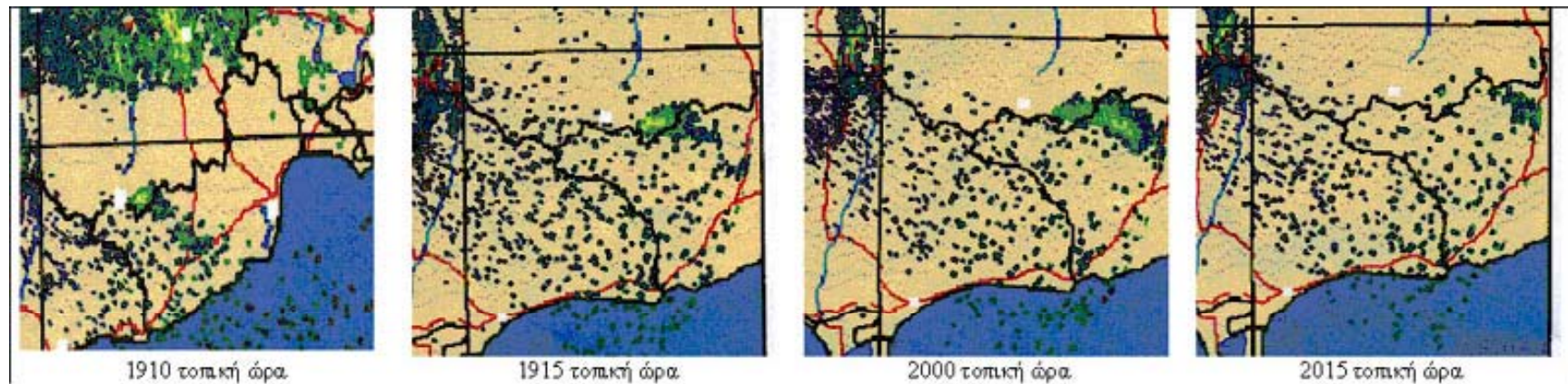


ATHENS, 8–10 JUNE 2009
GEO SOUTH EASTERN EUROPE AND EASTERN MEDITERRANEAN SYMPOSIUM



Using Radar as a guide tool in Forest Fires

The near surface wind direction is easily estimated by thorough observation of the smoke cloud created by the fire



The radar as a guide tool for insect “invasions” :-)

- ▶ Due to favourable synoptic conditions, swarms of locusts from surrounding areas were transferred to Cyprus resulting panic and despair to farmers
- ▶ The Doppler radar was able to follow their move and spot areas where they nestled for the night
- ▶ The area was sprayed by aircraft with pesticide

CYPRUS METEOROLOGICAL SERVICE DATABASE

ENVIRONMENTAL INFORMATION SYSTEM ENVIS



ENVIS

- The ENVIS database is used to input, store and report environmental information
- The GUI is subdivided into four sections – ground water, surface water, meteorology and water quality – plus an administration section.
 - Each section includes metadata
- The database is gradually replacing traditional forms
- optionally, the user can feed the database with data files from other sources, including data digitized from autographic instrument charts
- Everyday statistics

The Network in numbers

- ▶ Synoptic Stations 3 --> 3
- ▶ Climatological Stations 40 --> will gradually be replaced by automatic stations
- ▶ Automatic stations 26 --> 66
- ▶ Rainfall gauges 111 --> most will remain for historical reasons
- ▶ Radar (C-band) --> upgraded and supplemented with two X-band to cover the entire Island. Networked??
- ▶ 2-3 wind profilers

Synoptic and Aviation Meteorology Section

- ▶ 13 officers, 40 assistants
- ▶ 24/7/365, 2 officers, 10 assistants
- ▶ Numerical Modelling
 - MM5, Bolam, WRF, WAM, Cosmo
- ▶ Verification
- ▶ Research (models, dynamics of the atmosphere, neural networks)
- ▶ WEB dissemination

- ▶ NSA , ISO 9001 certified !!!

Climatology, Studies and Applications of Meteorology

Section

- ▶ 5 officers, 20 assistants
- ▶ Office hours
- ▶ Modelling
 - Crop modelling
 - PRECIS
- ▶ Database
 - Quality control of the data, statistics, interaction with public
- ▶ Research
- ▶ WEB dissemination

Technical Support section

- ▶ 3 officers, 5 assistants
- ▶ Office hours (most of the times..)
- ▶ Maintenance of all electronic equipment (automatic stations, workstations, servers)
- ▶ Calibration and service of the sensors
- ▶ Quality check

The C.M.S in Cyprus

- ▶ Weather Forecasts
 - Public (Television, radio broadcasting, media)
 - Aviation and light aviation, Coastal and open sea navigation
 - Fishery, mariners
 - Forecasts tailored for specific customers' needs
- ▶ Cooperation with local authorities
 - Civil Defence, Department of Air Quality – Ministry of Labour, Ministry of Education, Ministry of Agriculture, Forestry department, Organization of Agricultural Insurance
- ▶ Provision of raw data to professionals (fees)

The C.M.S. In Research : COST Actions

- ▶ Cost actions

COST action 719 “GIS and Meteorology”

COST action 726 “UV network”

COST action 728 “Enhancing mesoscale meteorological modelling capabilities for air pollution and dispersion applications”

COST action 730 “Universal Thermal index”

COST action 731 “Propagation of uncertainty in advanced Meteo–Hydrological forecast systems”

COST action 733 “Harmonisation and applications of weather types classifications for European regions”

The C.M.S. In Research

- ▶ European Funded Research Activities
 - VOLTAIRE, FLASH, EWENT (FP5, FP6, F7)
 - RISKMED, PRODIM (Interreg)
- ▶ Locally funded research activities
 - AERAS (GIS and neural network forecasting of dust events)
 - HEAT ISLAND (GIS and neural network distribution of heat in urban areas and forecasting severe heat events)
- ▶ Publications and contributions to conferences

THANK YOU :-)

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