



Copertina

# Corso di Fisica dello Strato Limite Atmosferico

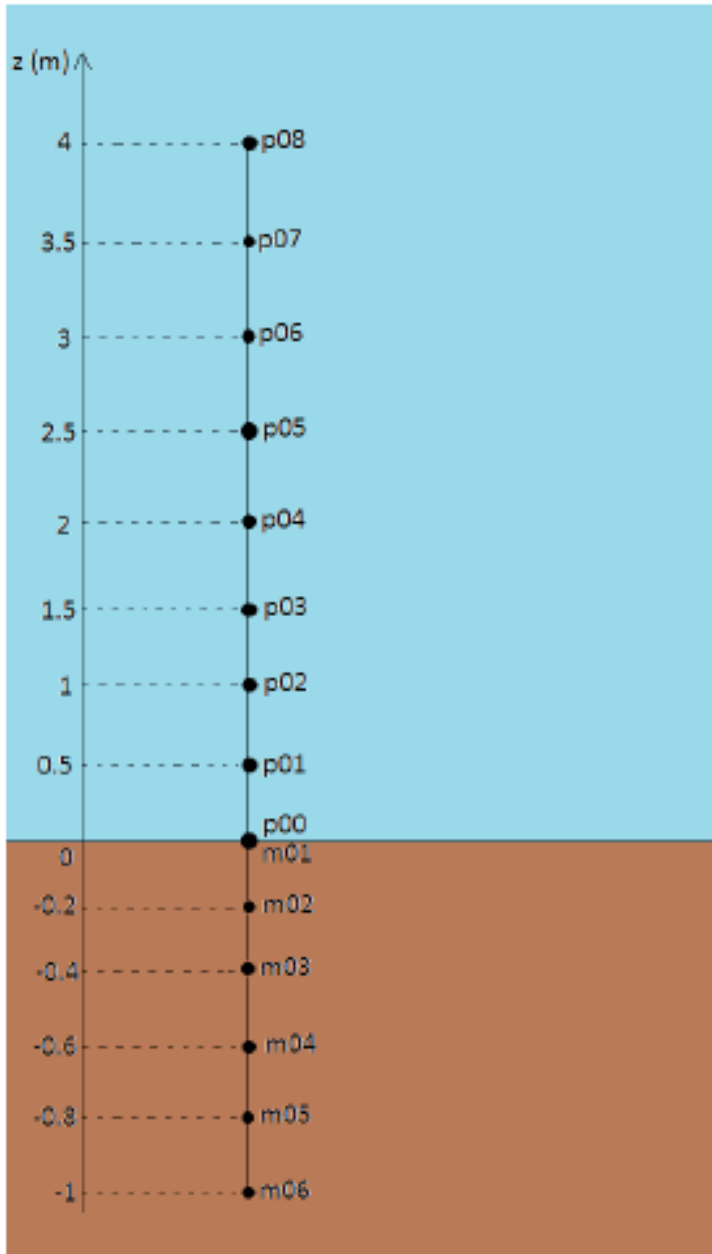
## Lo strato limite superficiale (Surface layer)

Giaiotti Dario

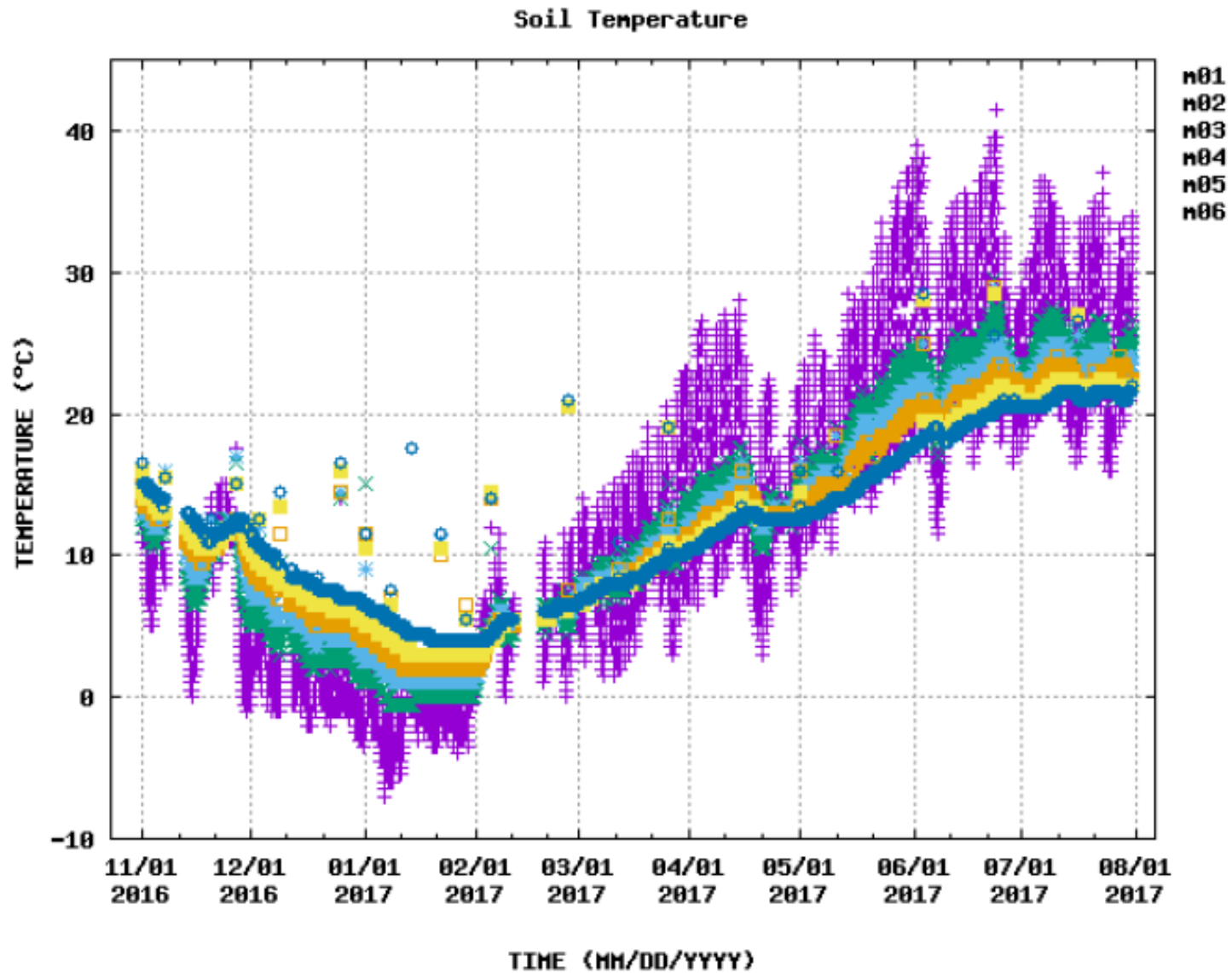
## Sommario della lezione

- Definizione di strato limite superficiale
- Caratteristiche dello strato limite superficiale
- Bibliografia di riferimento e per approfondimenti.

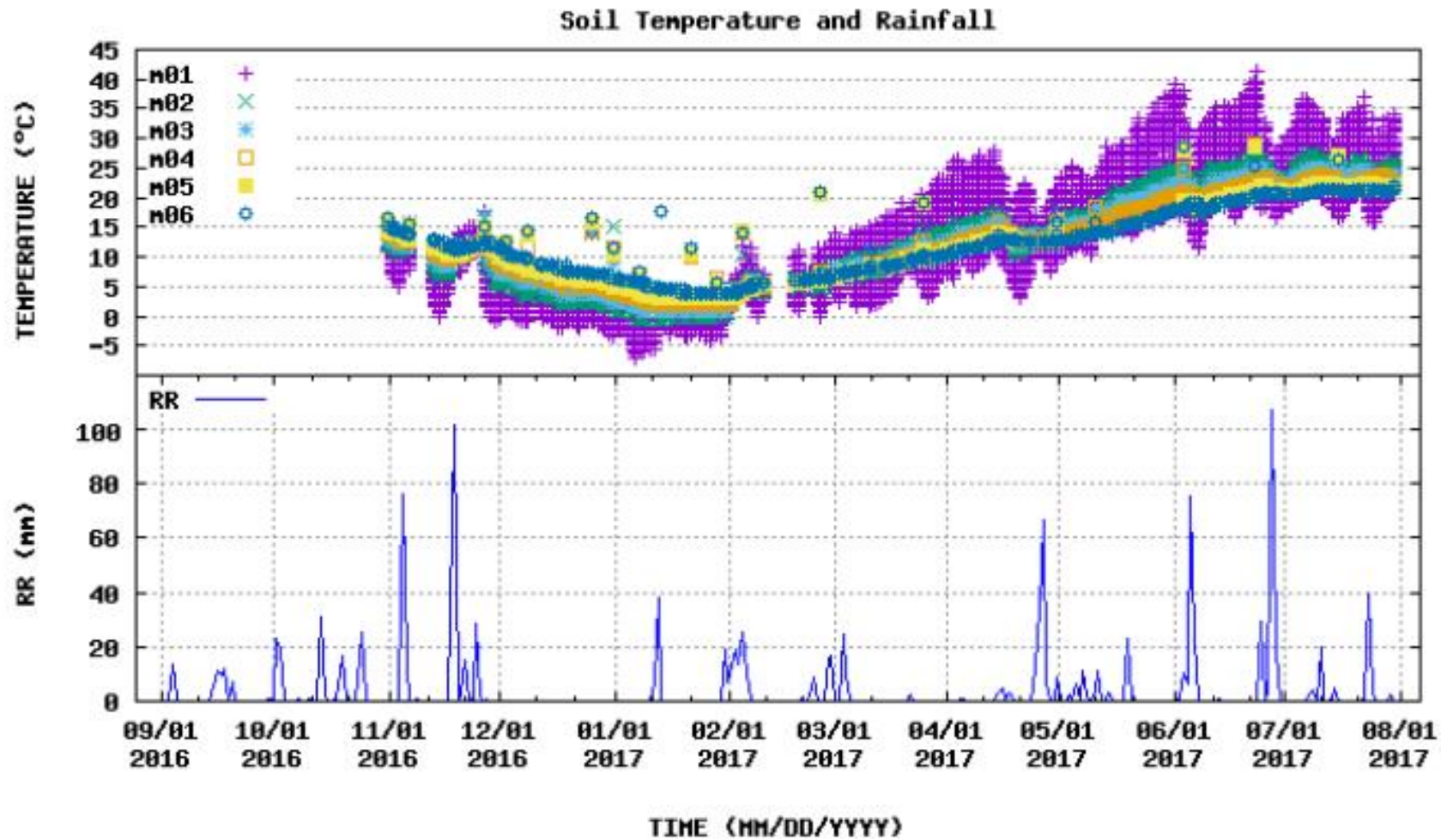
## Misure nel surface layer e nel terreno



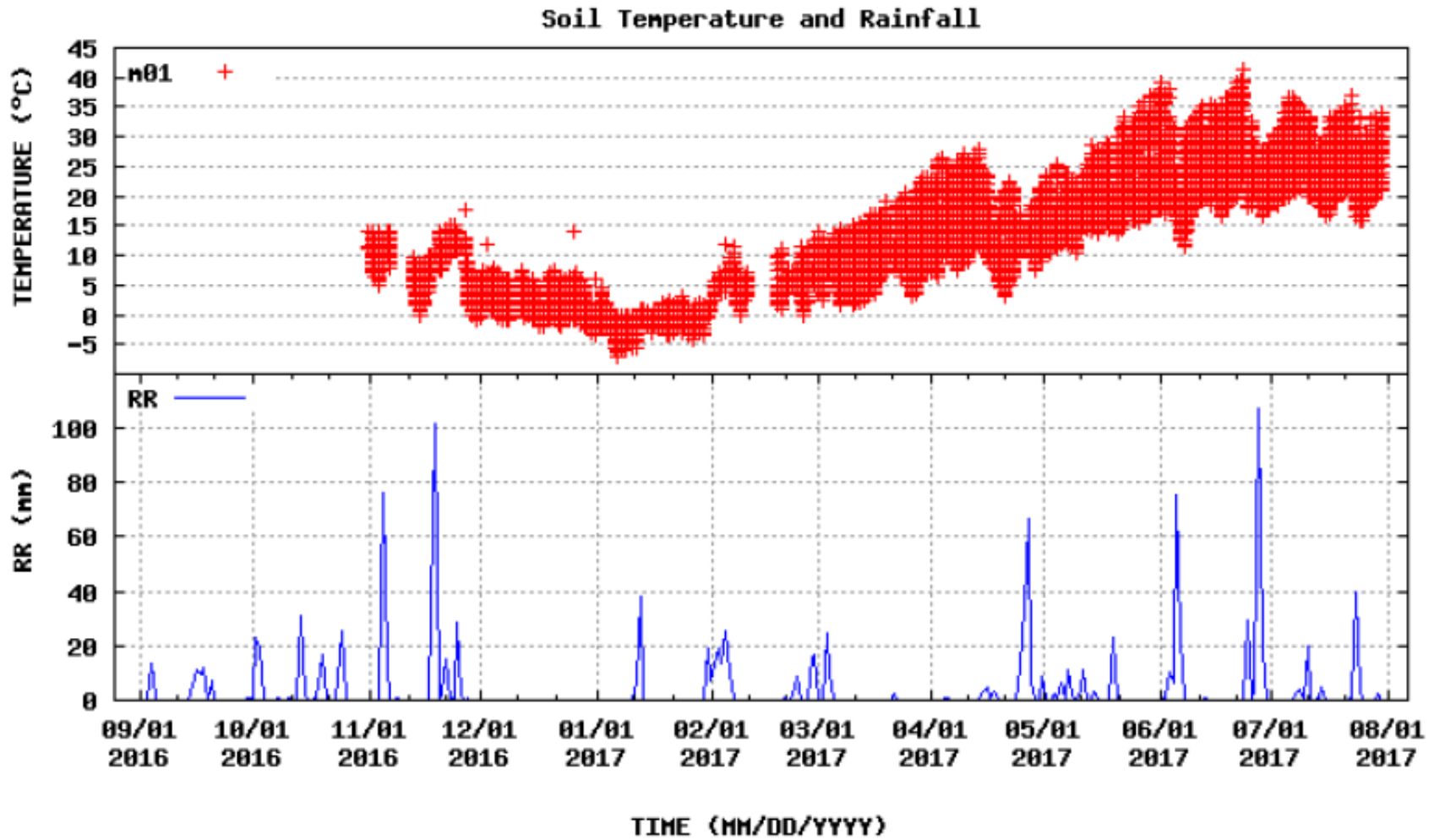
## Serie temporale delle temperature nel suolo



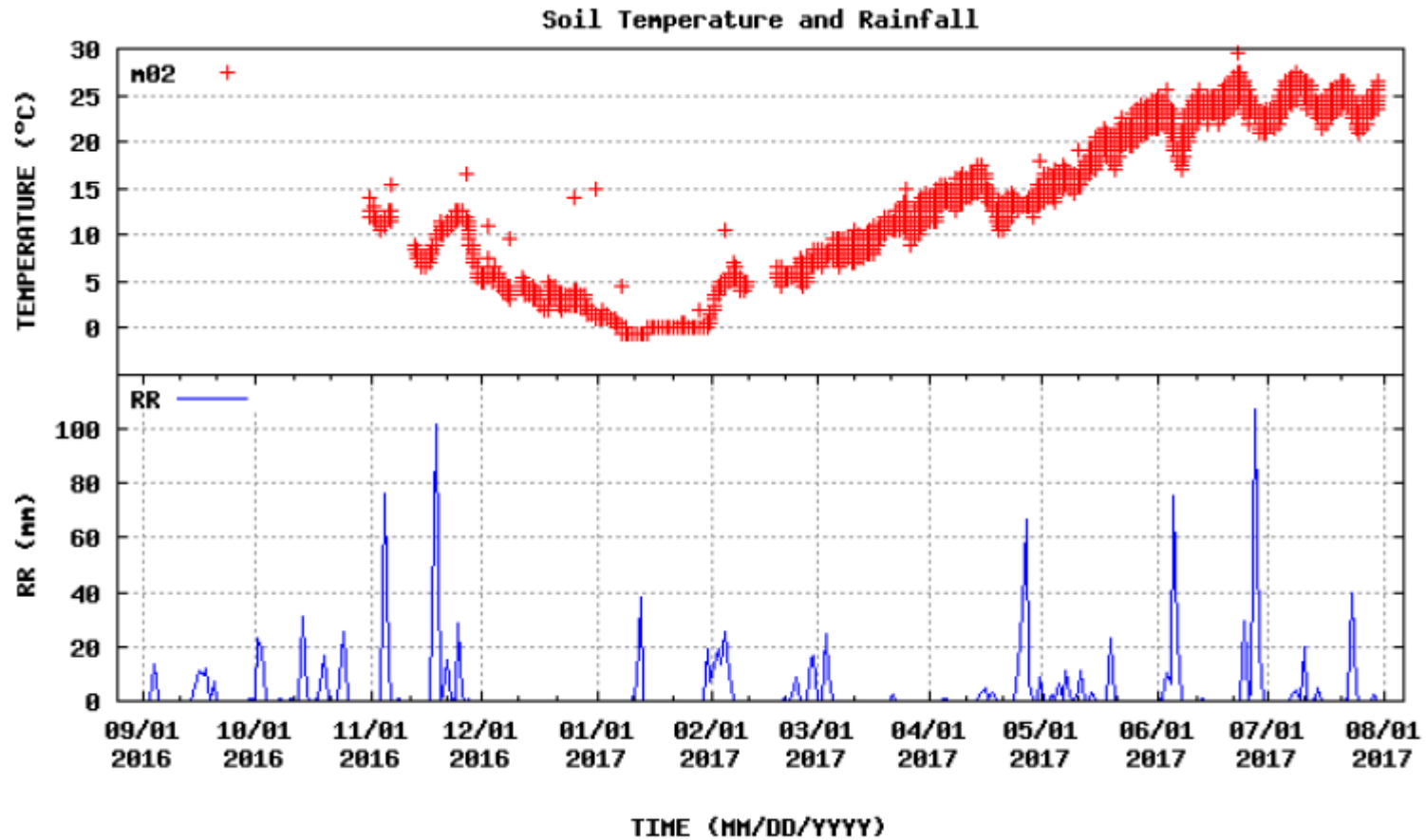
## Temperature del suolo e precipitazione



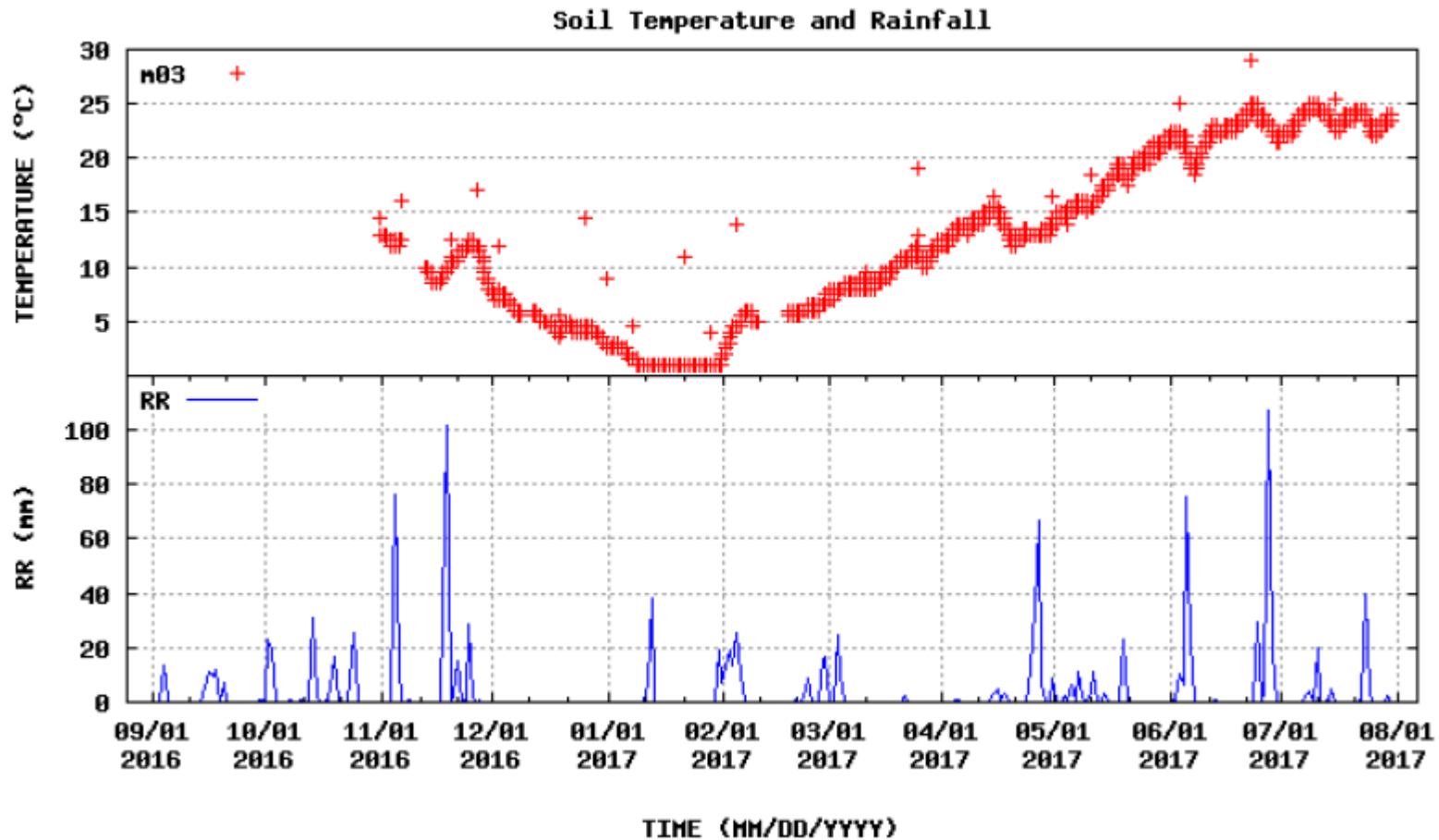
## Temperatura e precipitazione 0 cm



## Temperatura e precipitazione -20 cm

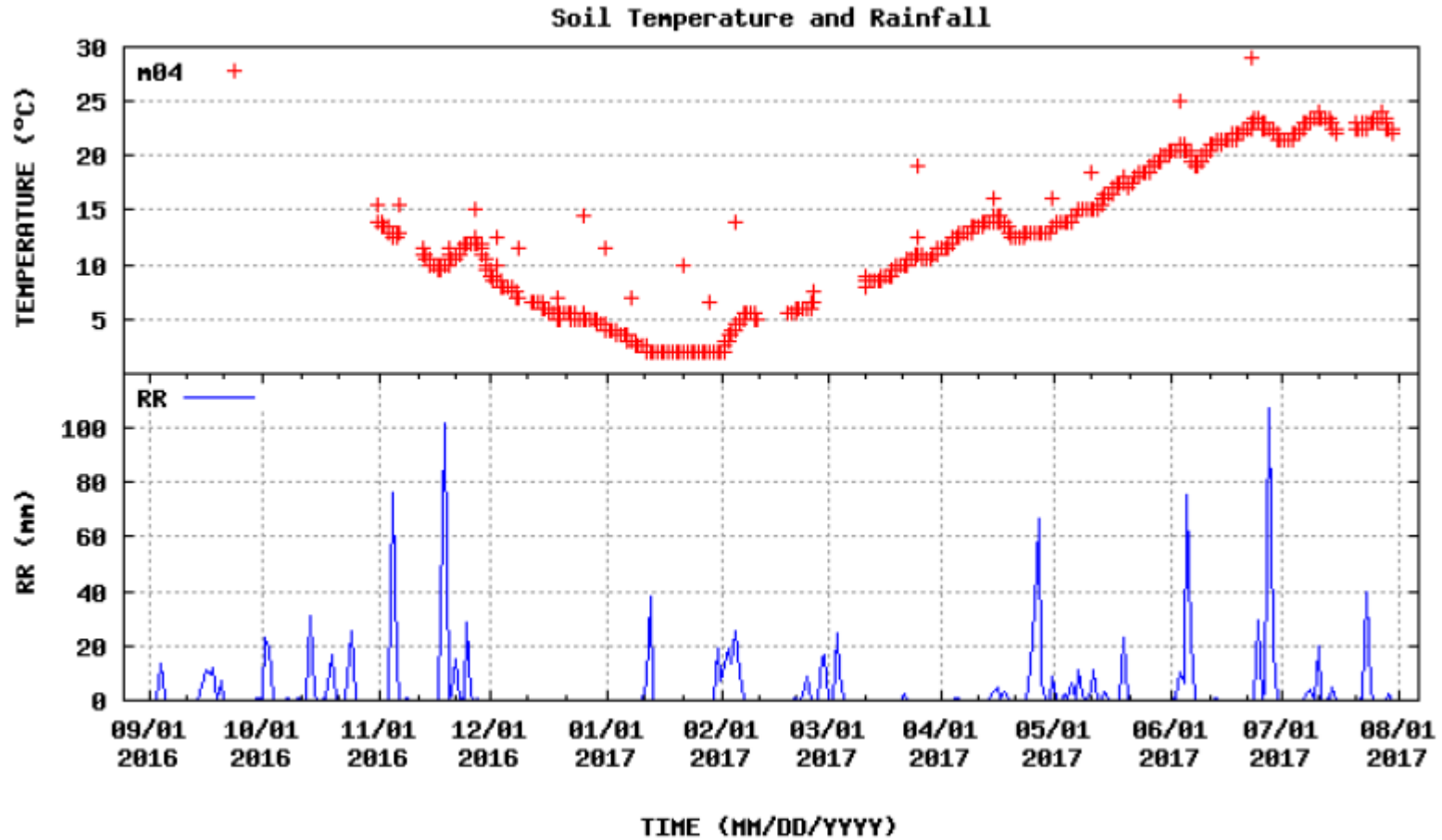


## Temperatura e precipitazione -40 cm

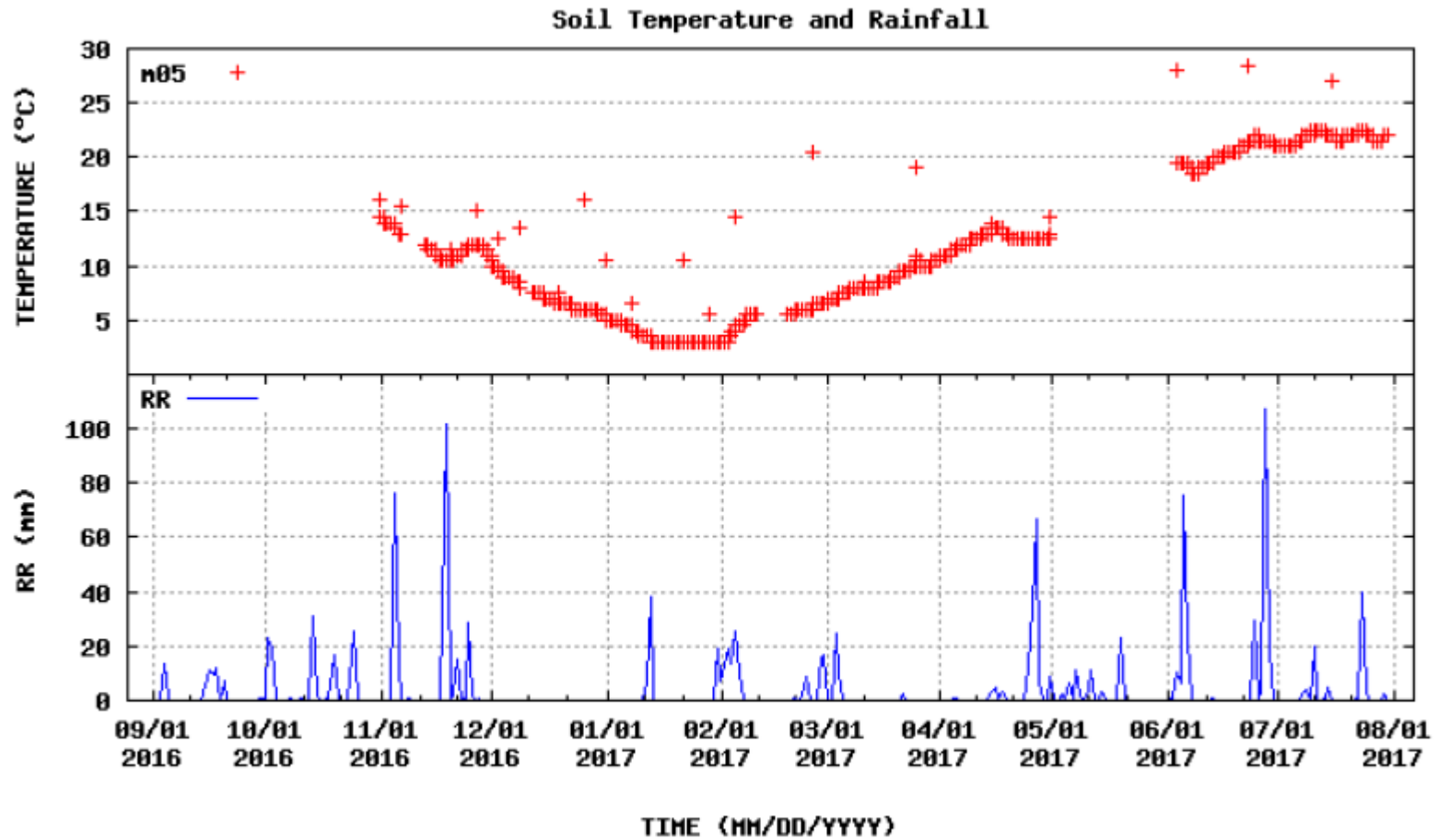




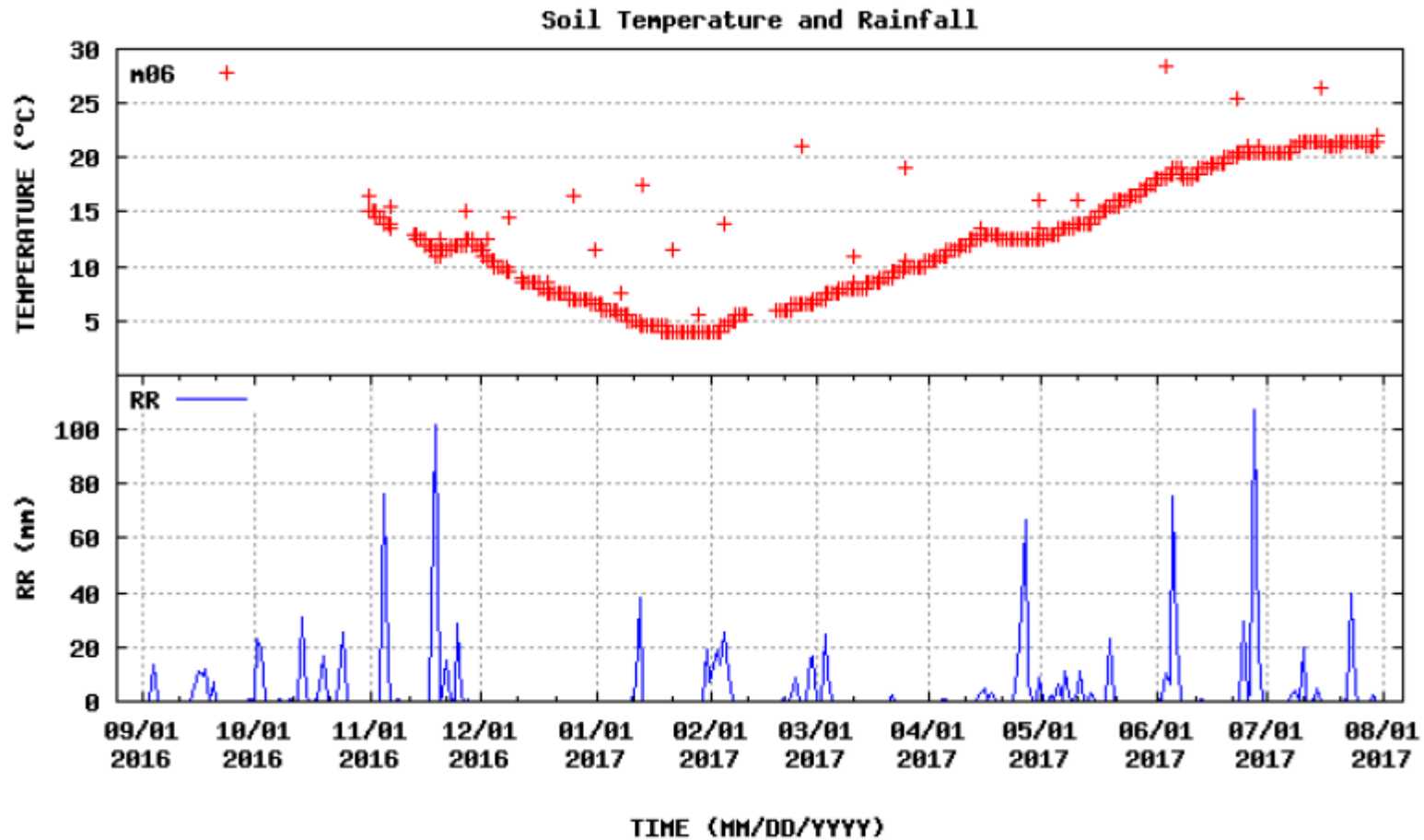
## Temperatura e precipitazione -60 cm



## Temperatura e precipitazione -80 cm

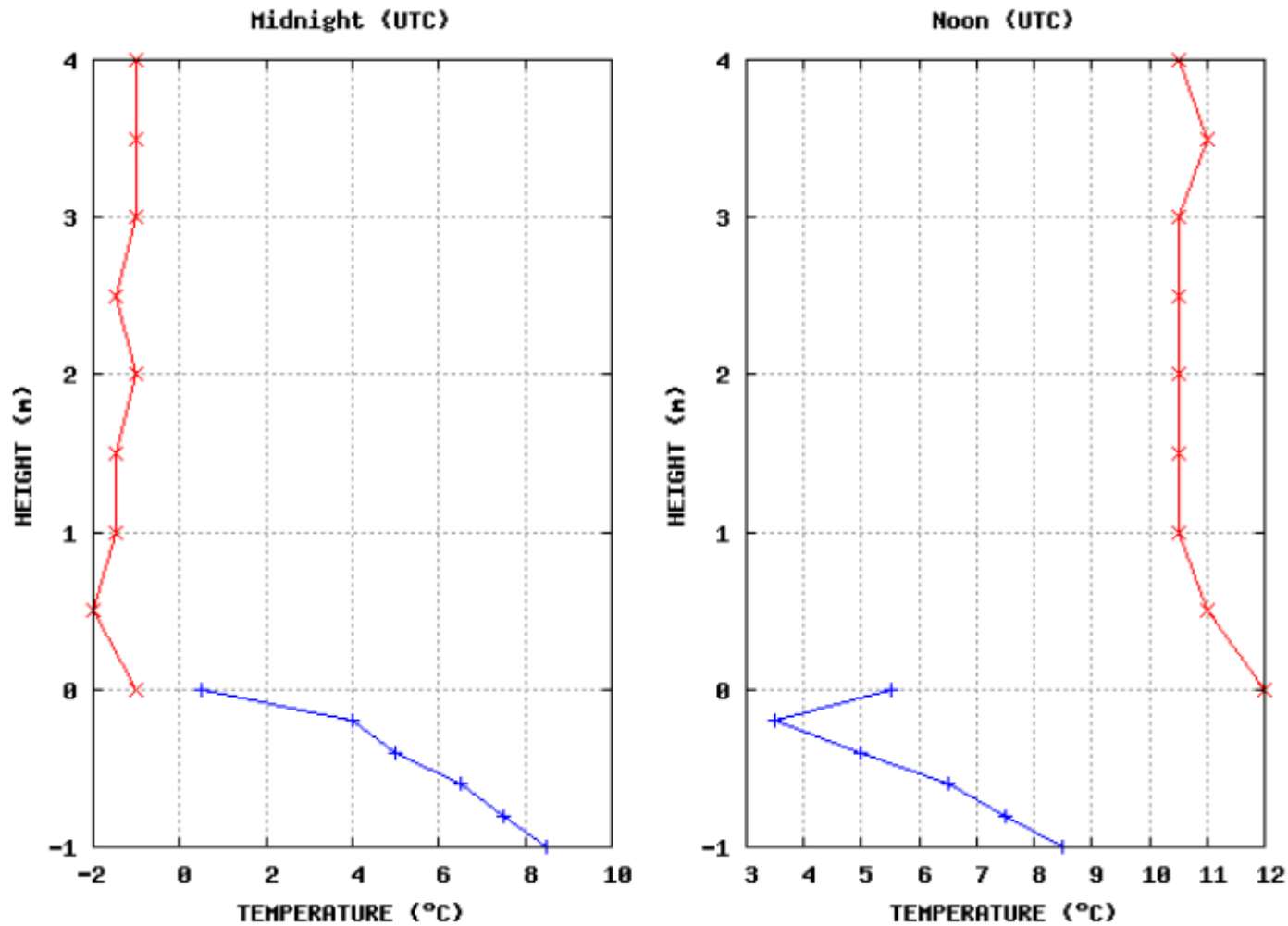


## Temperatura e precipitazione -100 cm



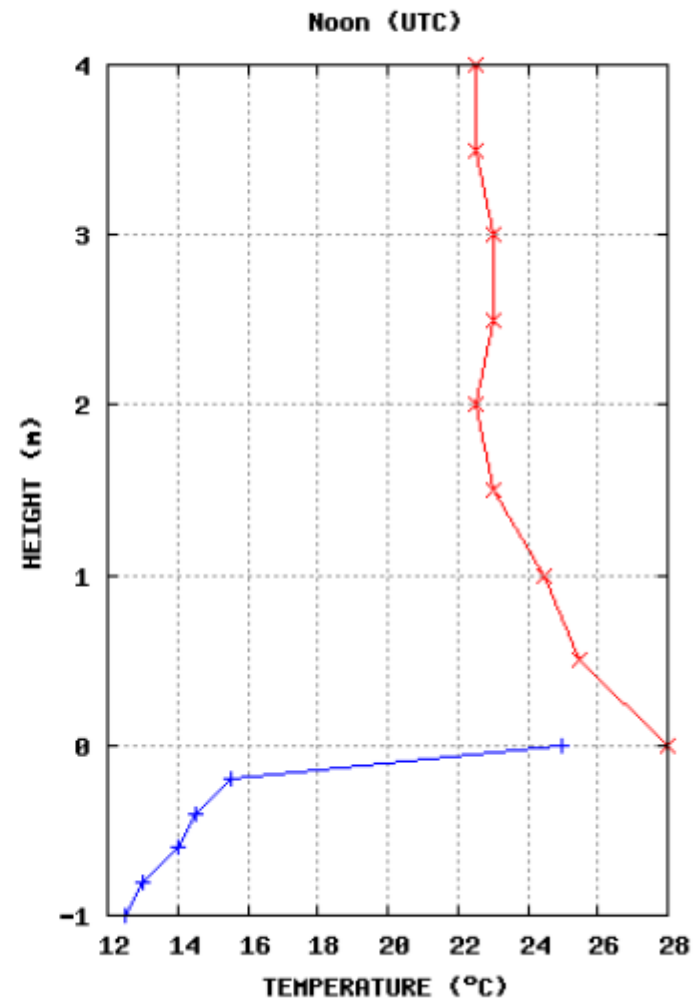
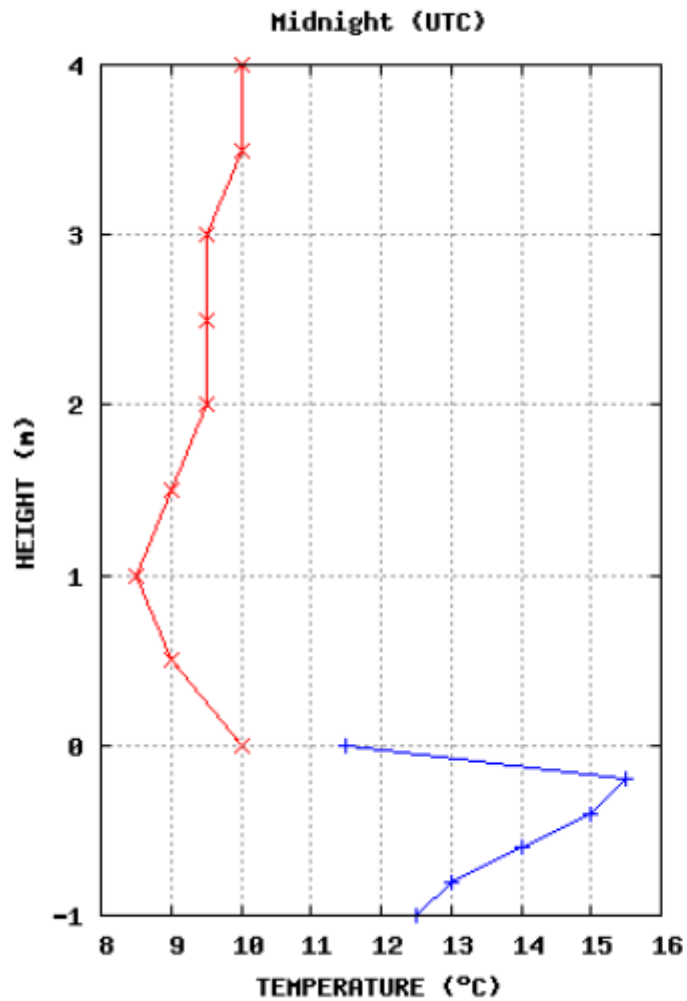
## Profili termici tipici invernali

15 December 2016



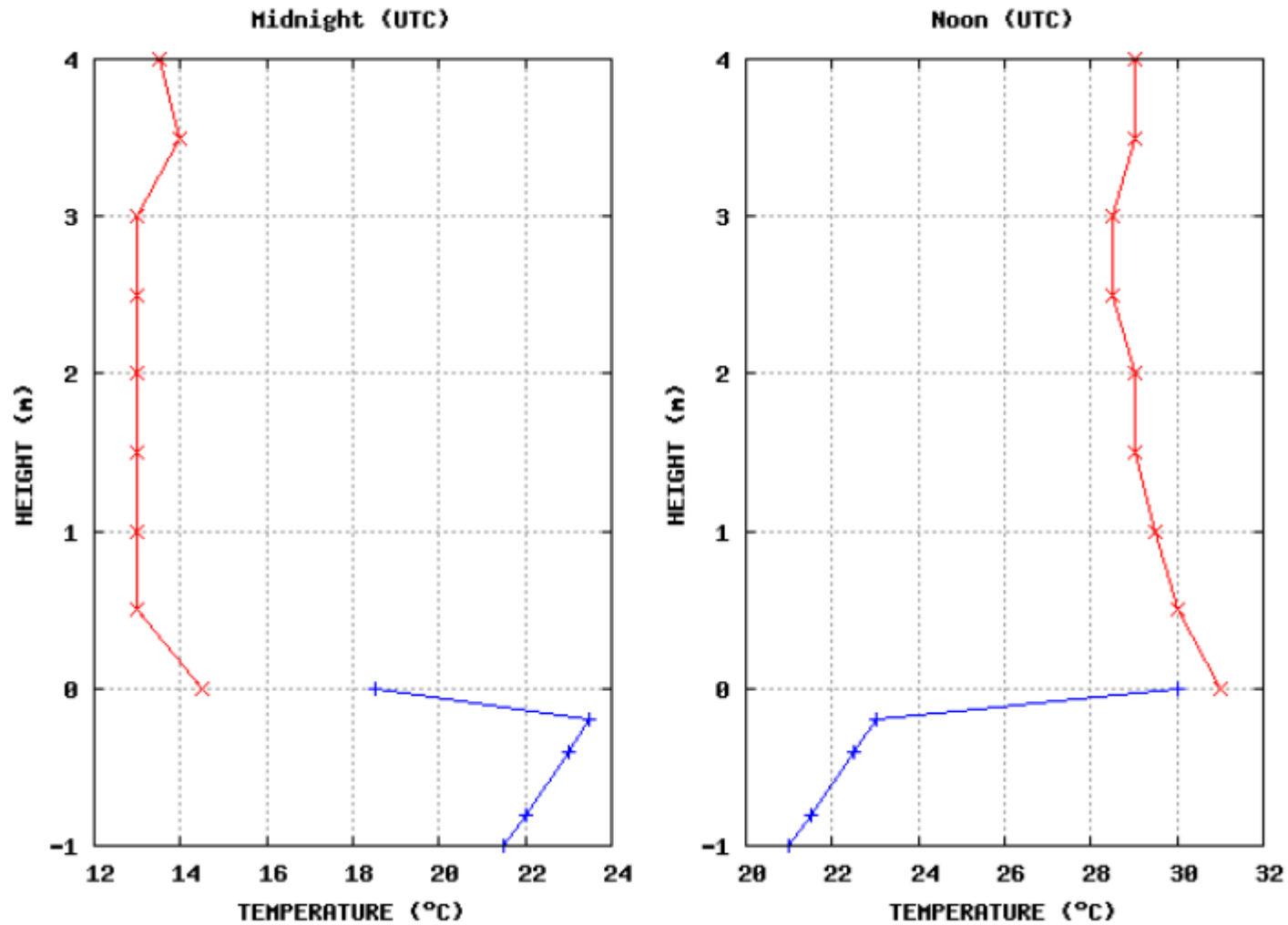
## Profili termici tipici primaverili

14 April 2017



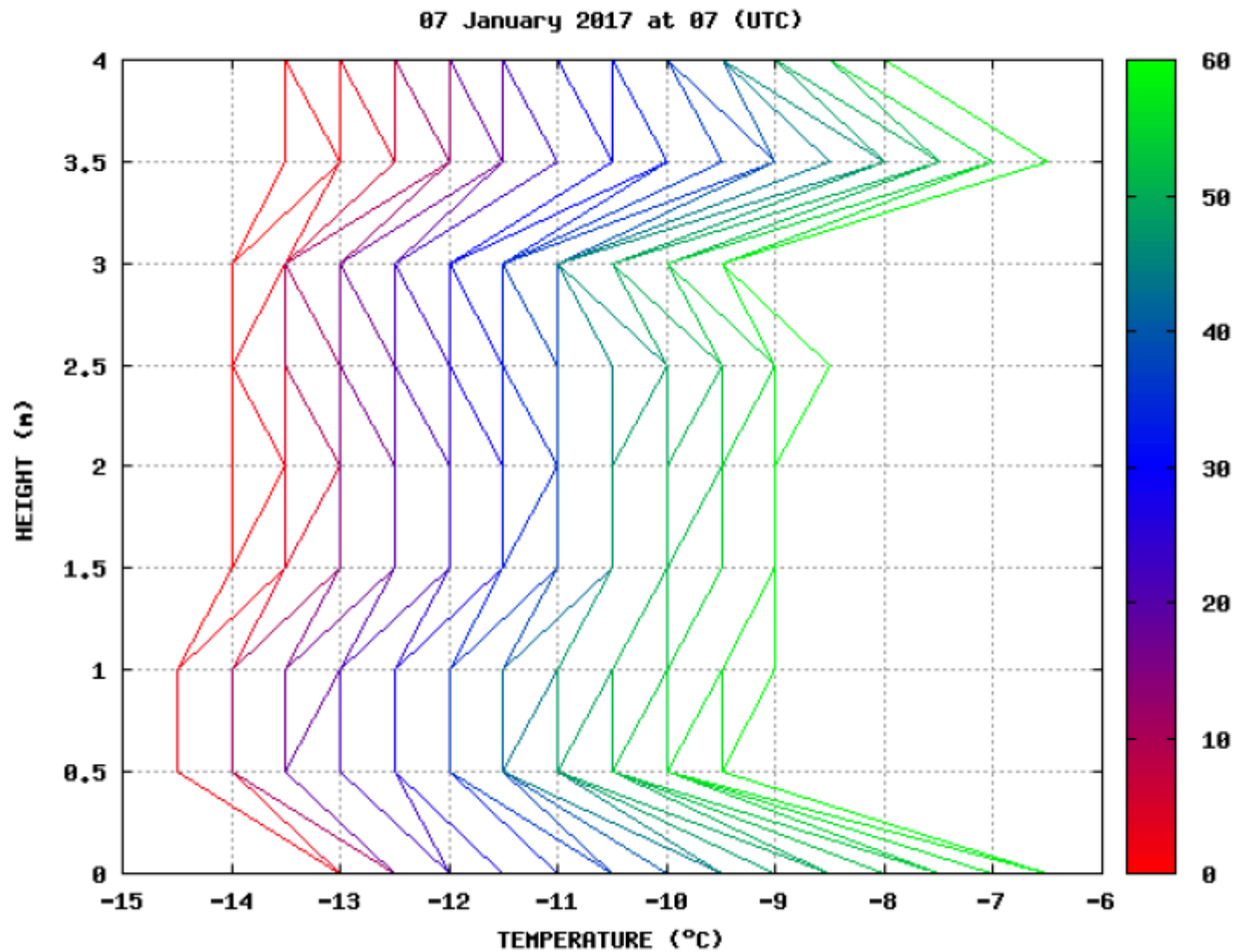
## Profili termici tipici estivi

17 July 2017



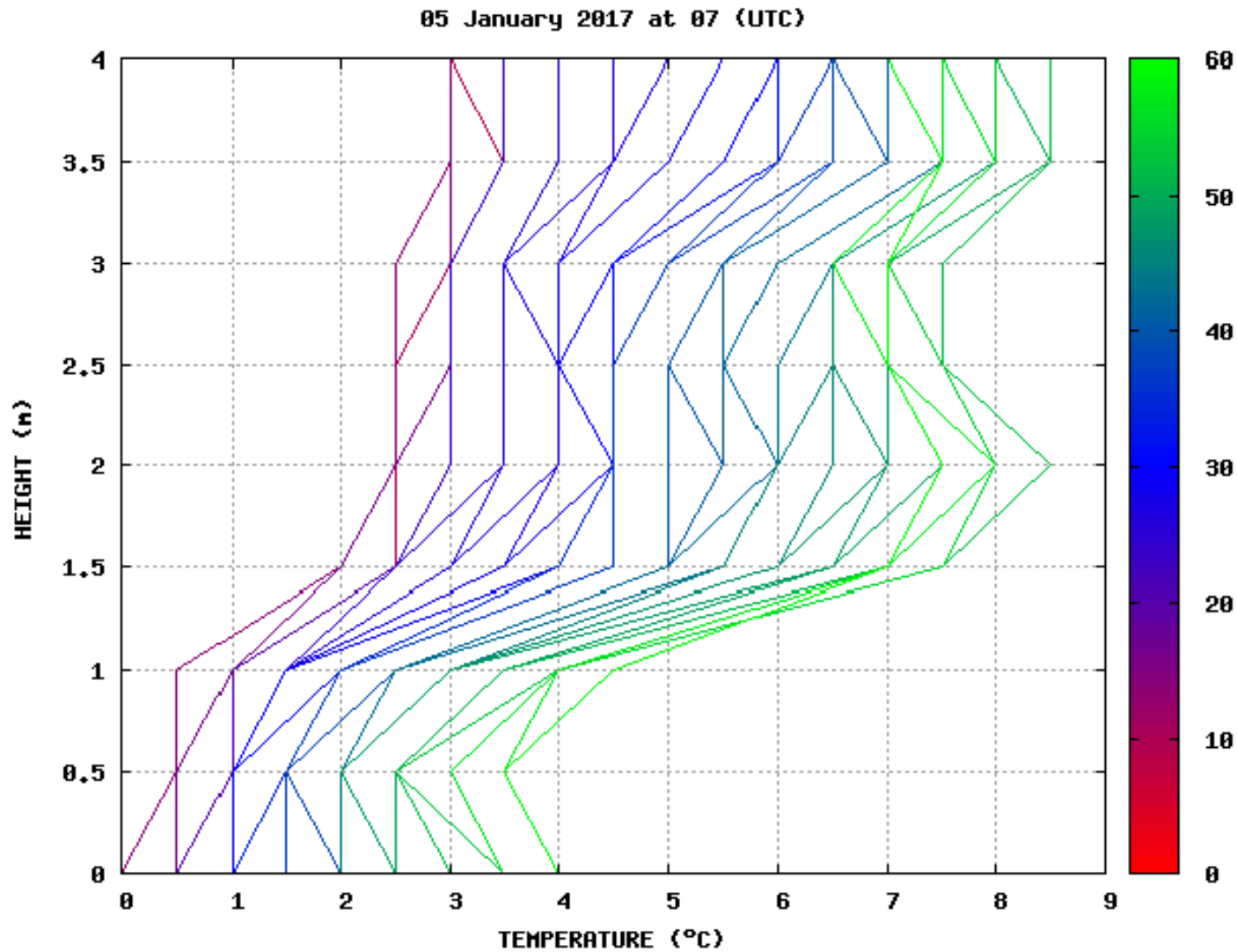
## Evoluzione del gradiente termico nel surface layer in inverno assenza di vento

Minuto dall'inizio dell'ora



## Evoluzione del gradiente termico nel surface layer in inverno – presenza di vento

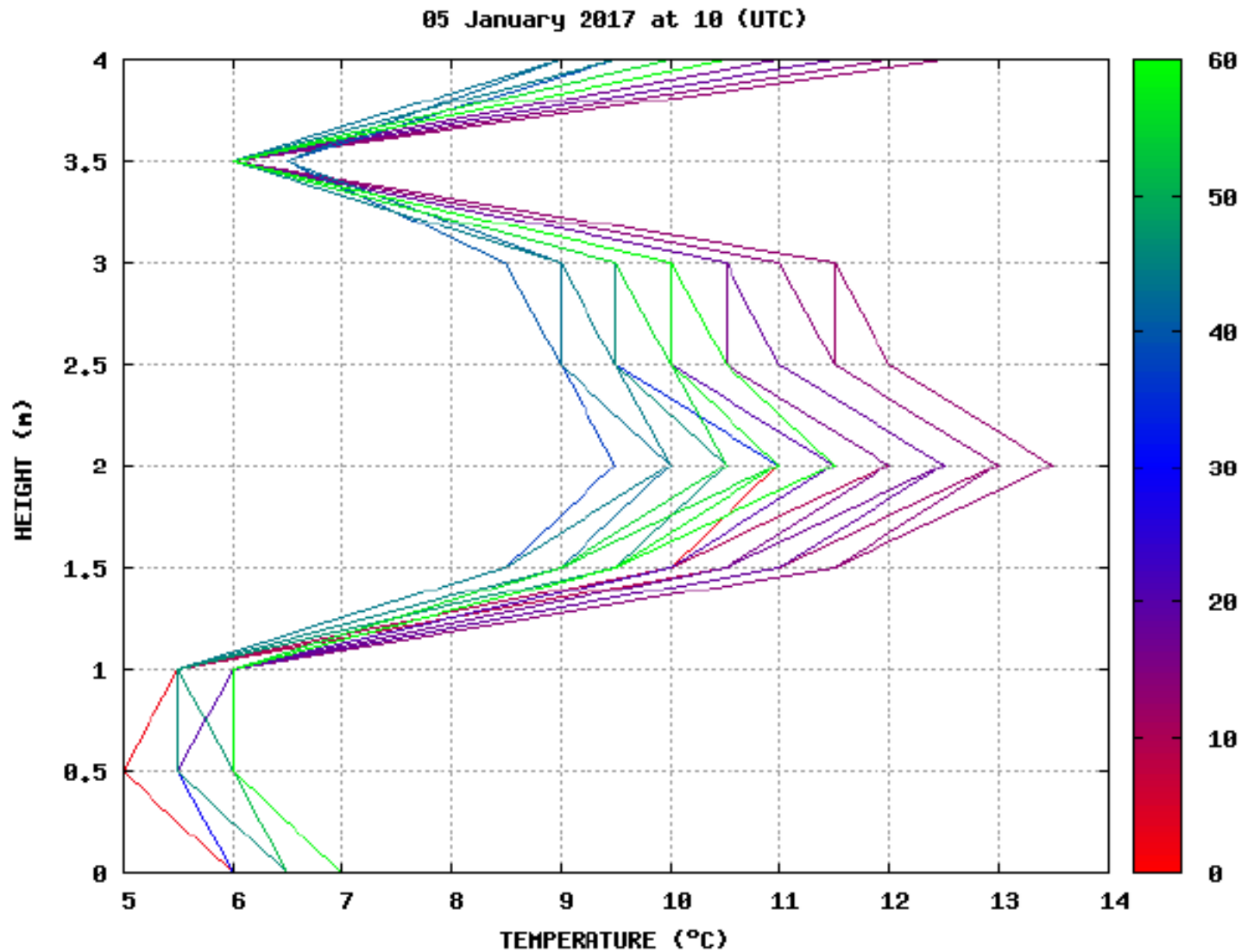
Minuto dall'inizio dell'ora





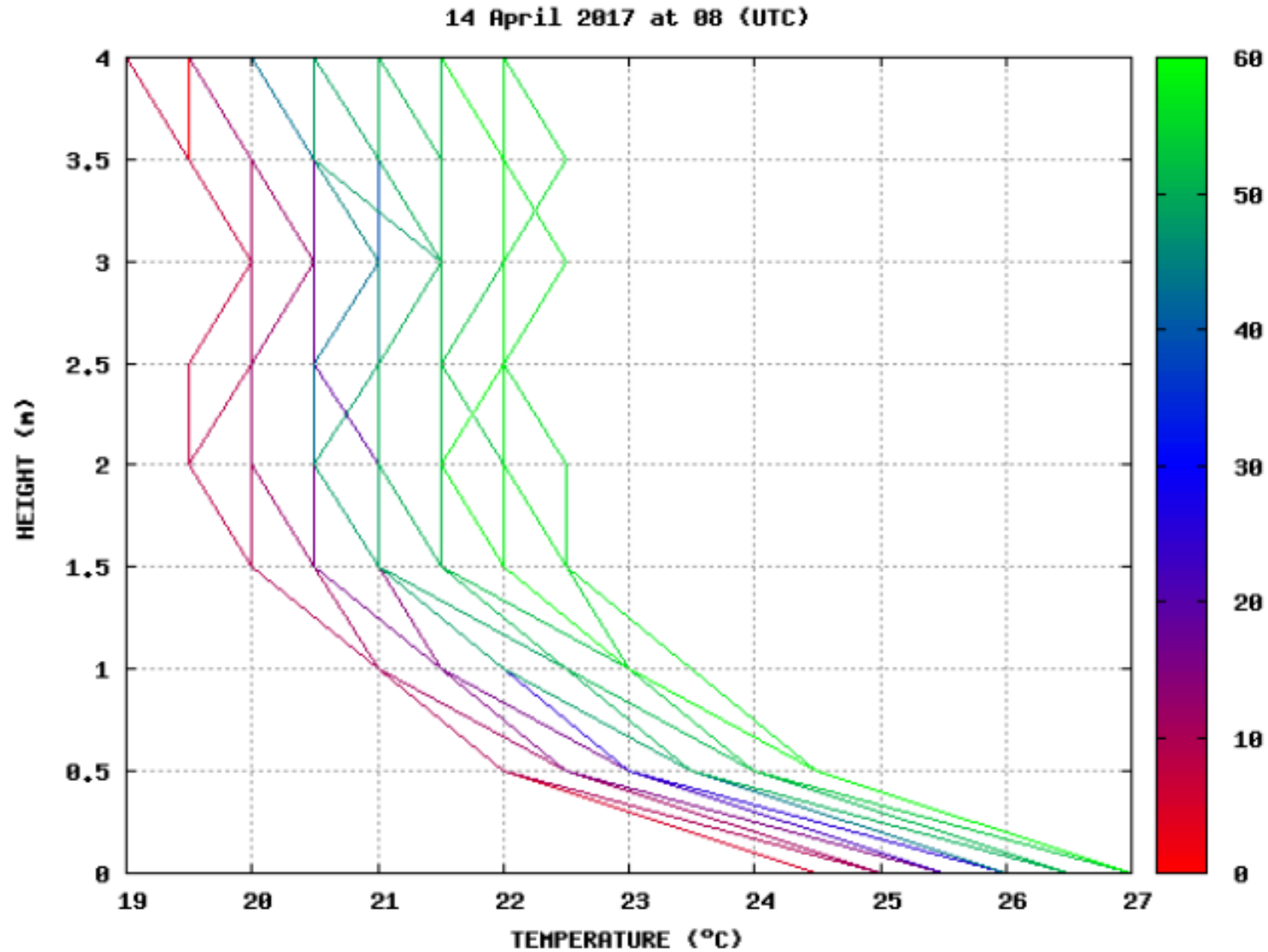
## Evoluzione del gradiente termico nel surface layer in inverno presenza di vento

Minuto dall'inizio dell'ora



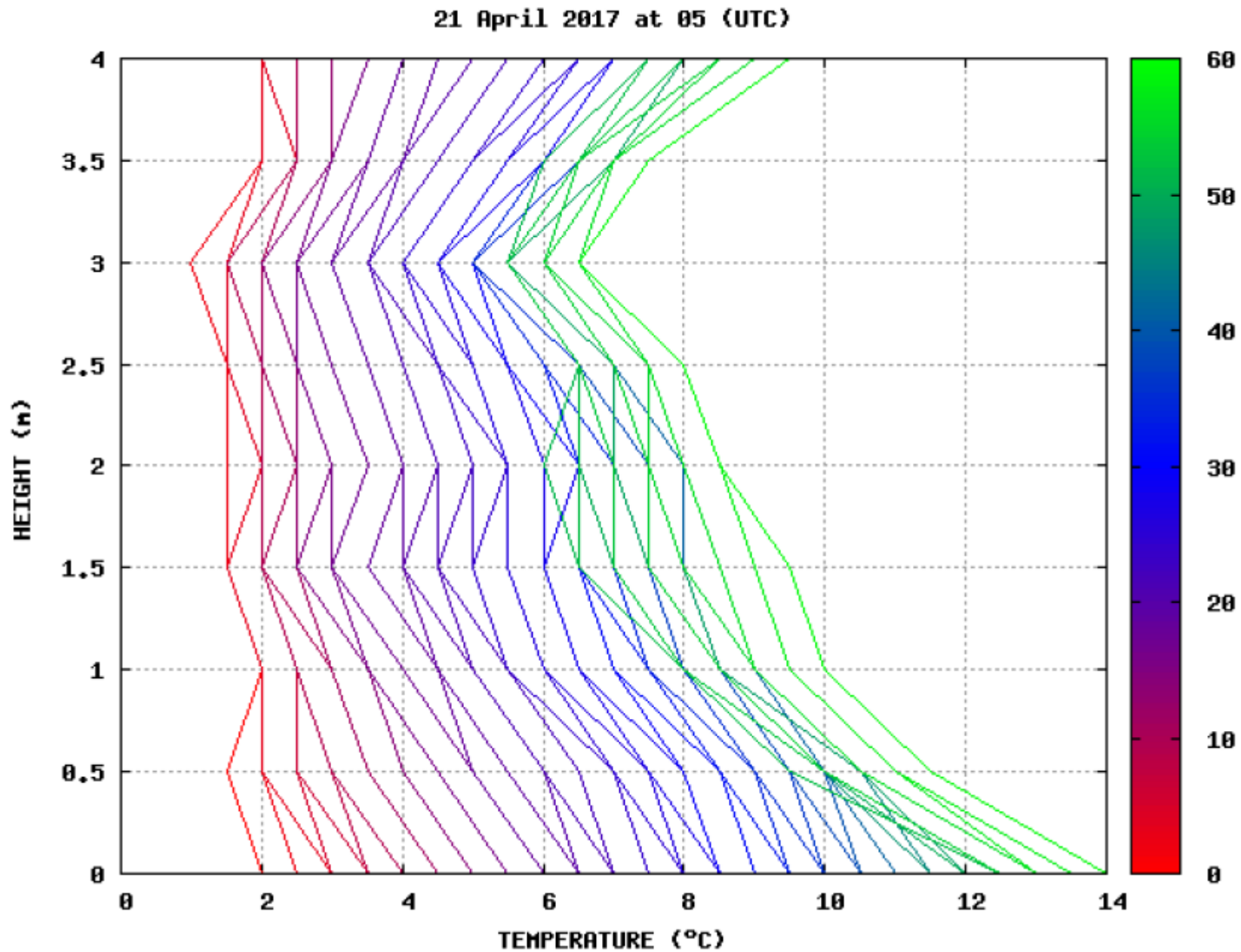
## Profili termici primaverili

Minuto dall'inizio dell'ora

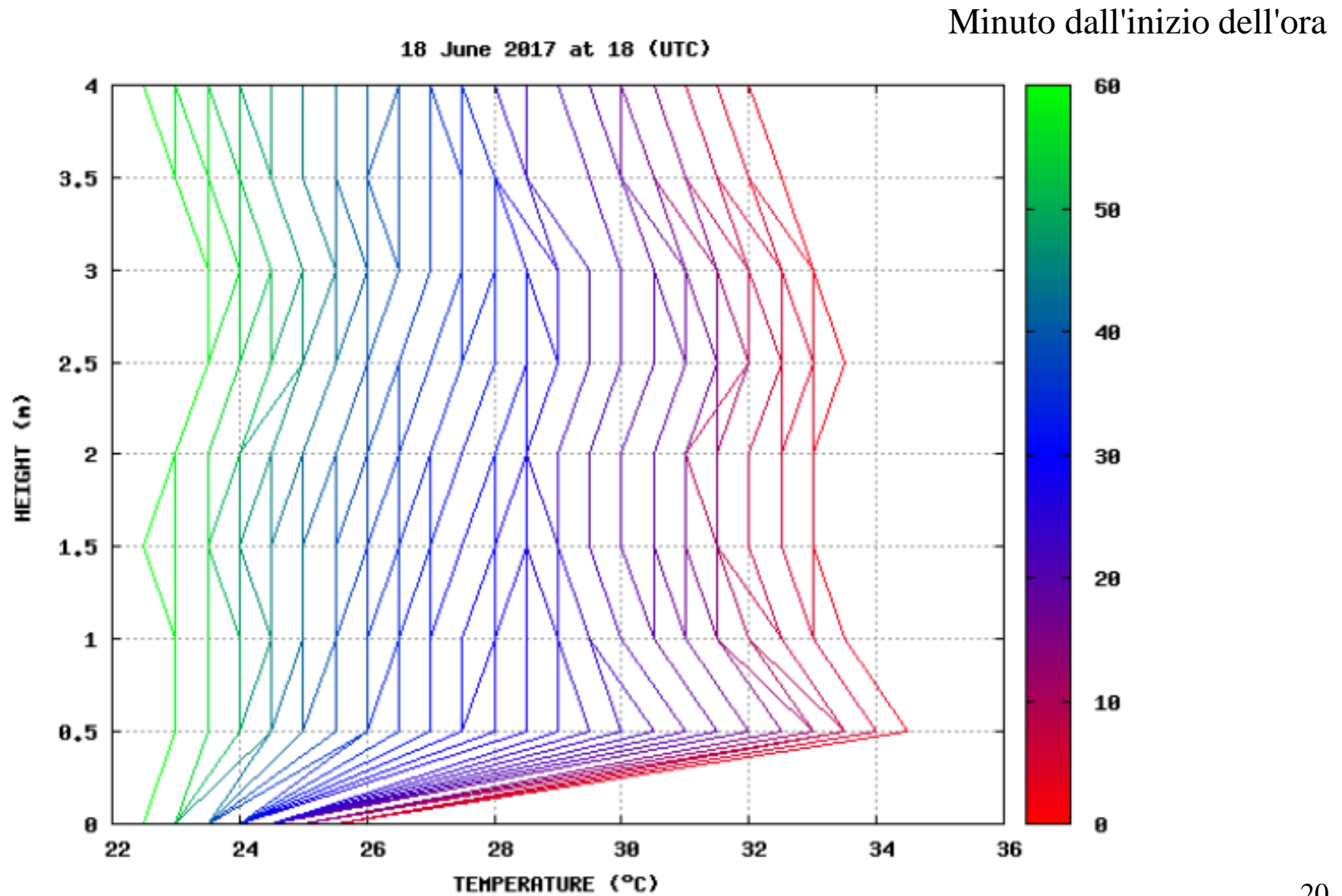


## Evoluzione primaverile all'alba in assenza di vento

Minuto dall'inizio dell'ora



## Evoluzione estiva al tramonto in assenza di vento



## Bibliografia di riferimento

Basic laws of turbulent mixing in the surface layer of the atmosphere

A.S. Monin and A.M. Obukhov [https://mcnaughty.com/keith/papers/Monin\\_and\\_Obukhov\\_1954.pdf](https://mcnaughty.com/keith/papers/Monin_and_Obukhov_1954.pdf)

Turbulence in the atmosphere - Wyngaard, John C. 2010

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<https://www.biblioest.it/SebinaOpac/resource/turbulence-in-the-atmosphere/TSA2315521?tabDoc=tabloca>

Turbulence and diffusion in the atmosphere : lectures in environmental sciences

Blackadar, Alfred K. Springer – 1997

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<https://www.biblioest.it/SebinaOpac/resource/turbulence-and-diffusion-in-the-atmosphere-lectures-in-environmental-sciences/TSA0153499?tabDoc=tabloca>