

# The new WegenerNet Web Portal - A Gateway to over 10 Years of High-resolution Weather and Climate Data

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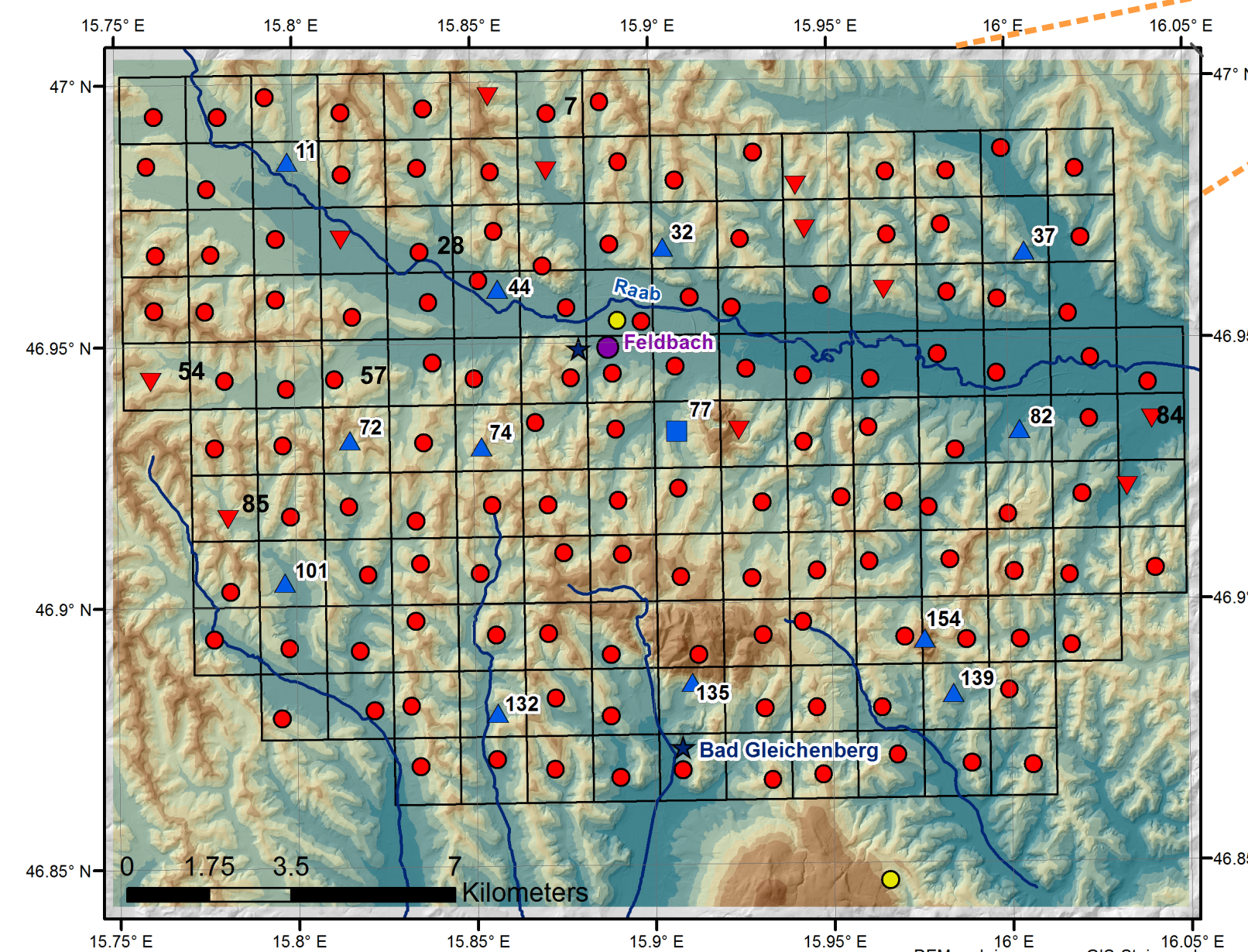
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## WegenerNet - Brief Overview

### a) Feldbach Region (FBR)

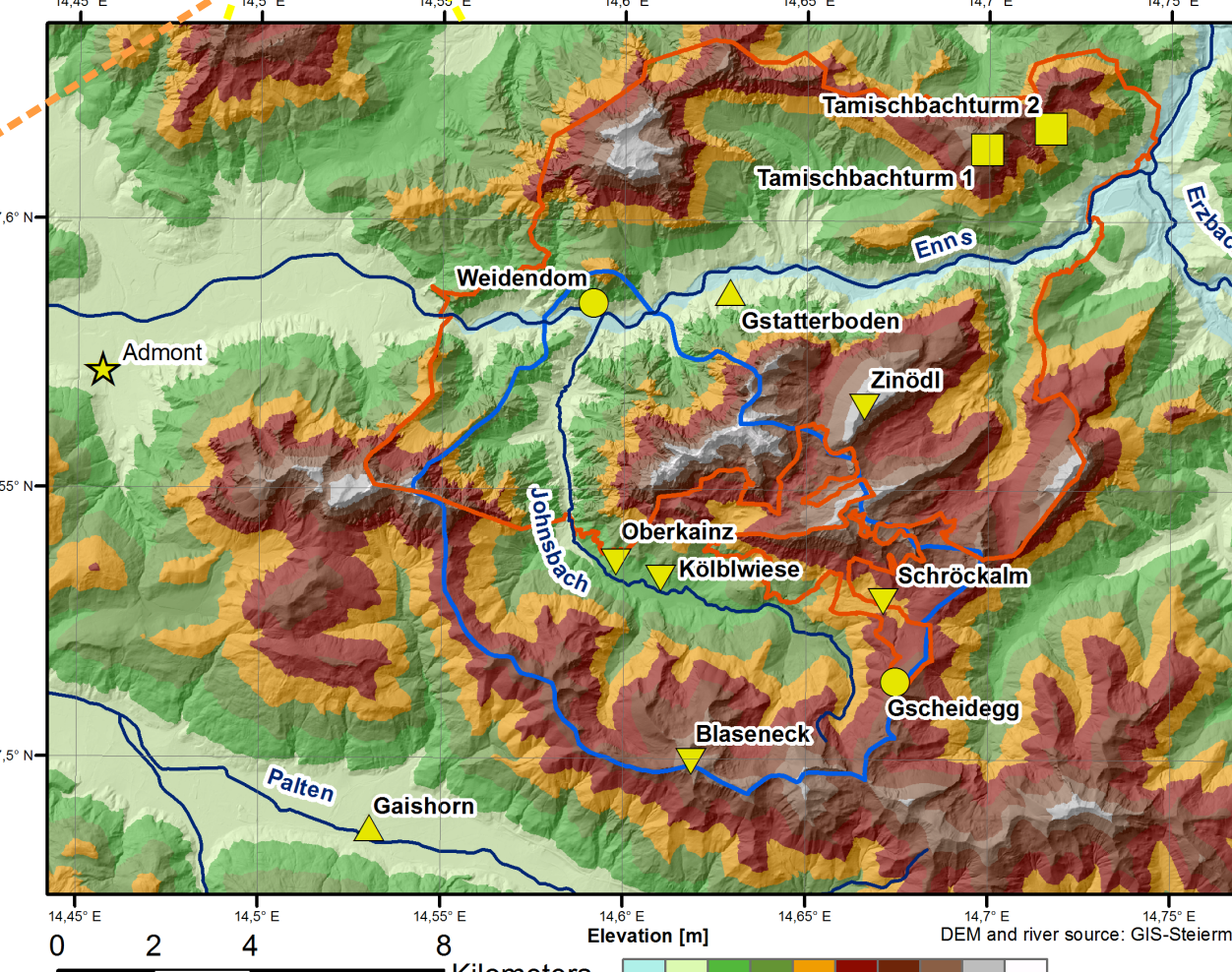
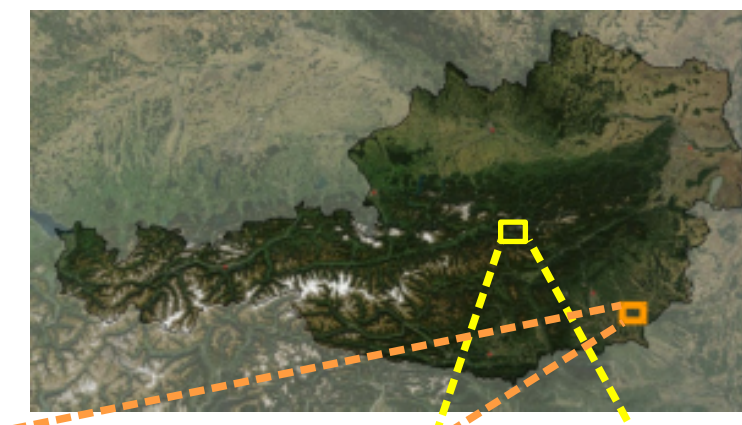
- 154 meteorological stations within 23 km x 18 km area
- main parameters: air temperature, relative humidity, precipitation, wind and soil moisture
- 5 minute sampling
- automatic processing system (data transfer, quality control, generation of weather and climate data products)
- interpolated gridded data for main parameters (200 m x 200 m UTM)
- data provided at renewed data portal [www.wegenernet.org](http://www.wegenernet.org)
- data available since January 1, 2007



**Fig. 2: WegenerNet Feldbach Region** (23 km x 18 km, mean alt. ~330 m) and station locations in the station grid. Base stations are marked by red circles, stations with wind sensors by upward looking triangles, stations with soil sensors by downward looking triangles, stations of the Austrian Hydrographic Service by yellow circles and ZAMG reference stations by stars.

**Fig. 1: Location of study areas** (FBR: orange rectangle, JBT: yellow rectangle)

### b) Johnsbachtal (JBT)



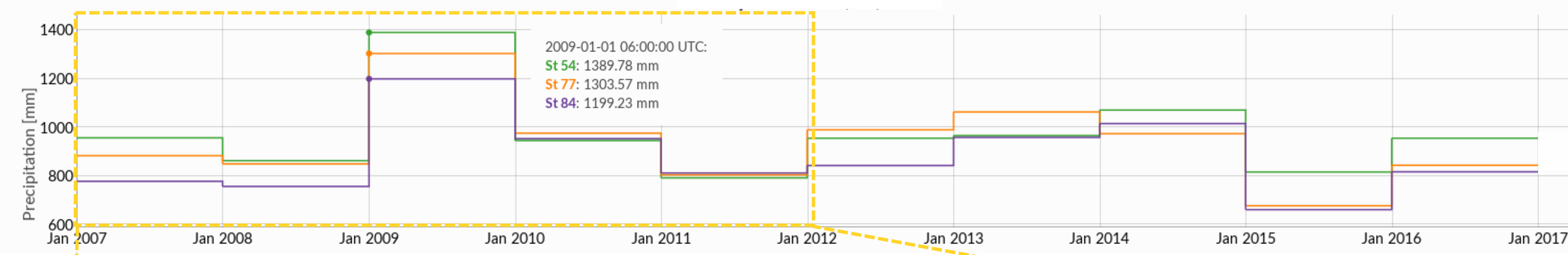
**Fig. 3: WegenerNet Johnsbachtal area** (25 km x 18 km), station locations (yellow), catchment (blue), and border of the Gesäuse National Park (red). WEGC Stations (five) are marked by downward looking triangles, partner stations by upward looking triangles, circles, and squares; ZAMG reference station by a star.

- 11 meteorological stations (plus 1 hydrographic station)
- stations operated by Wegener Center and several partner organizations
- alpine setting, altitudes ranging from below 700 m to over 2100 m
- main parameters: air temperature, relative humidity, precipitation, wind, radiation, and snow depth
- 10 minute sampling
- automatic processing system
- quality controlled data provided at new data portal [www.wegenernet.org](http://www.wegenernet.org)
- data available partly since October 2010, partly since January 2007

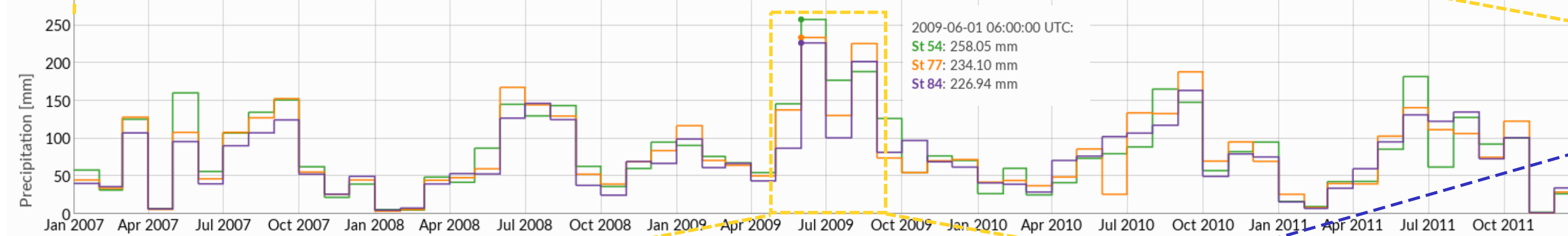
## Station Data - Precipitation Data Time Series

Station data are available for all stations in different temporal resolutions: From 5-minutes over half-hourly, hourly, daily, monthly to seasonal and annual. **Figs. 4a-e** show examples of precipitation data (plotted using the new web portal) for three WegenerNet FBR stations (54, 77, and 84) with increasing temporal resolution and detail. The stations represent a west-east cut through the region (see Fig. 2 for locations) and thus allow to see the differences in precipitation between the western and eastern borders of the study region.

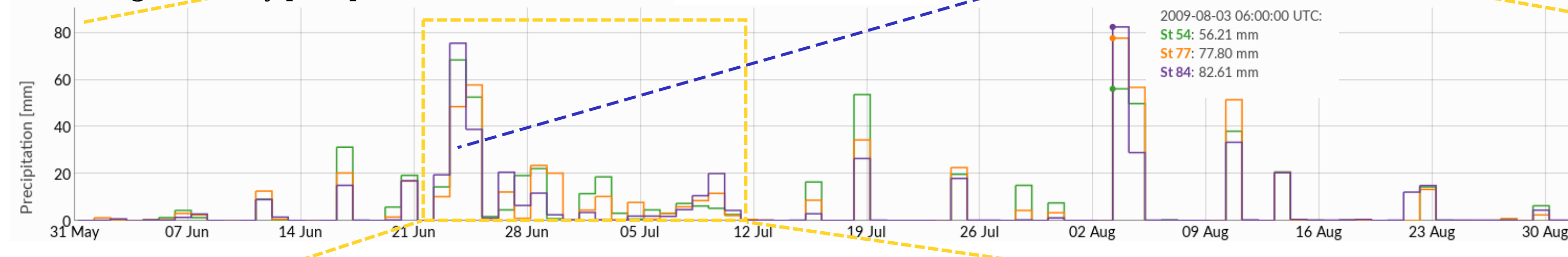
**Fig. 4a:** Annual precipitation sums from 2007 to 2016 (10 yrs.) at stations 54, 77, and 84



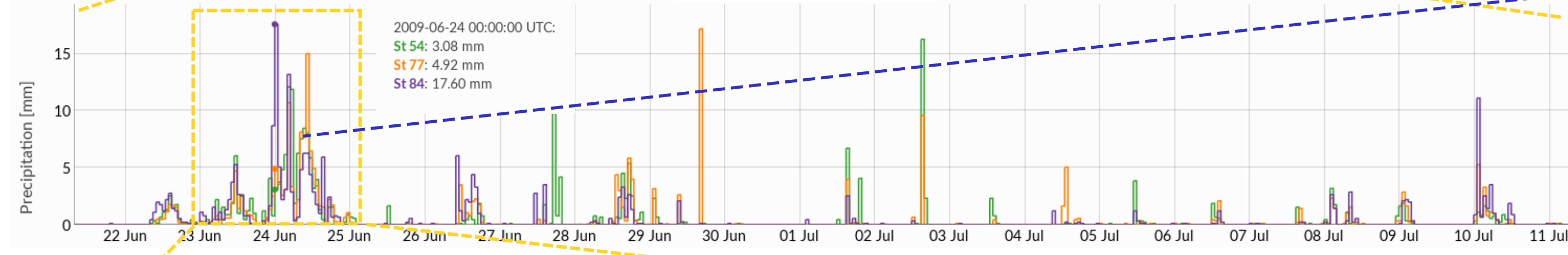
**Fig. 4b:** Monthly precipitation sums from 2007-01 to 2011-12 at stations 54, 77, and 84



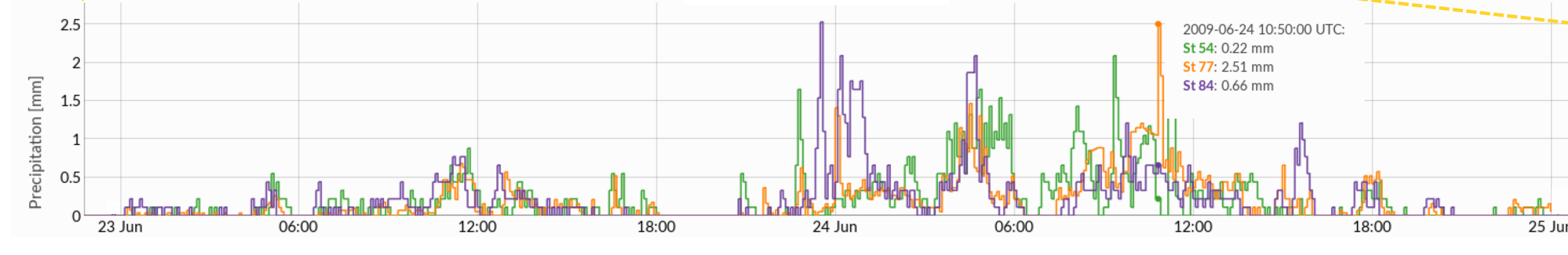
**Fig. 4c:** Daily precipitation sums from 2009-05-31 to 2009-08-31 at stations 54, 77, and 84



**Fig. 4d:** Hourly precipitation sums from 2009-06-21 to 2009-07-11 at stations 54, 77, and 84

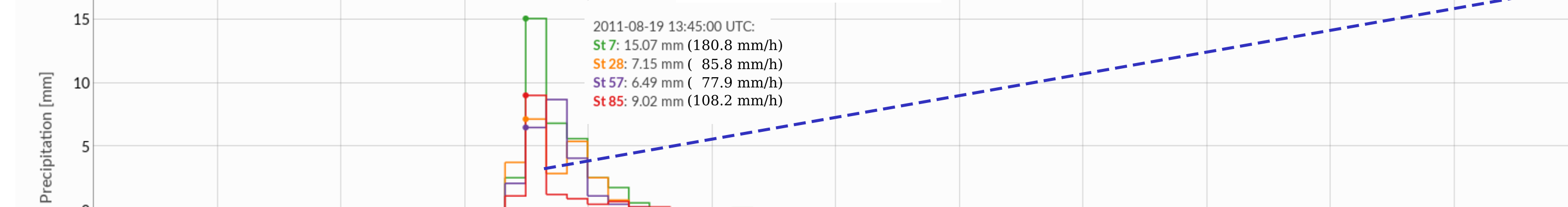


**Fig. 4e:** 5-minute precipitation sums from 2009-06-23 00:00 to 2009-06-25 00:00 at stations 54, 77, and 84



**A convective rainfall event** is illustrated in **Fig. 5** below. Stations 7, 28, 57 and 85 (locations see Fig. 2) represent a NE-SW cut through the region. Note the rain rate of ~15 mm/5 min (~180 mm/h) at station 7, which is more than twice the rate of station 28 (located only 4 km away).

**Fig. 5:** 5-minute precipitation sums on 2011-08-19 from 12:00 to 18:00 UTC at stations 7, 28, 57, and 85

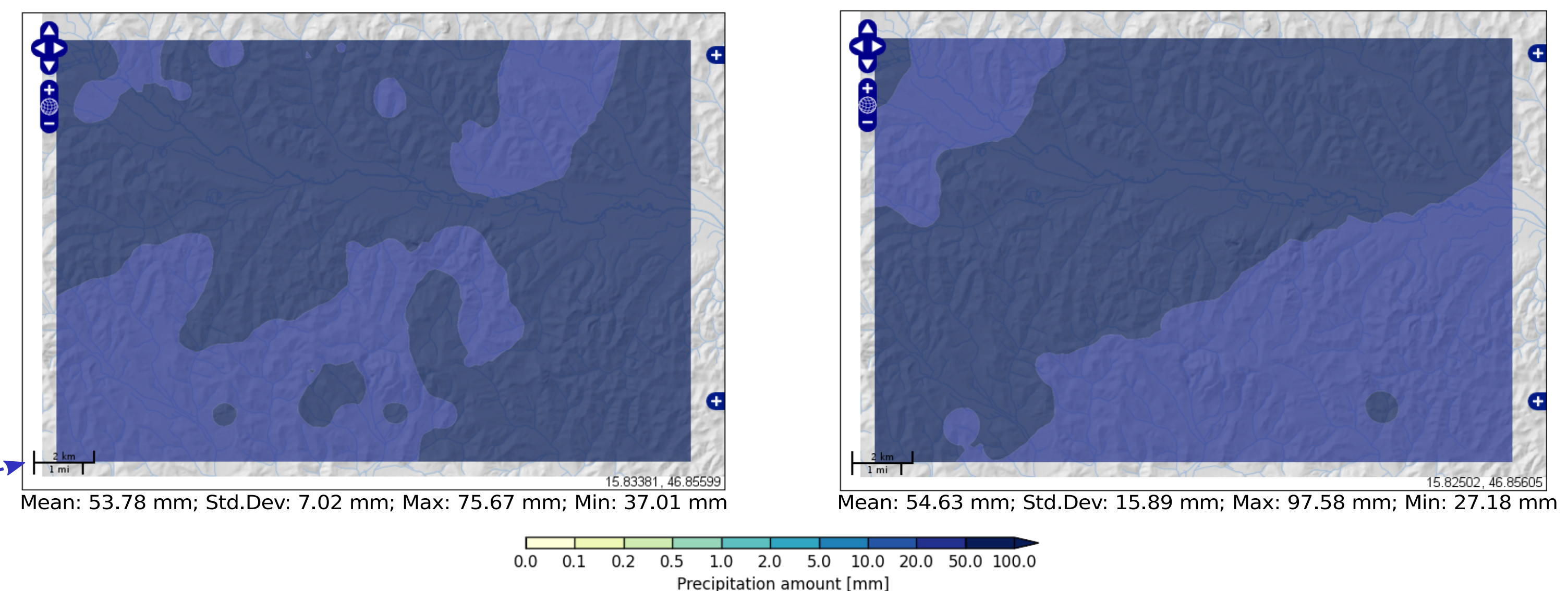


## Gridded Data - Precipitation Data Maps

Station data are interpolated onto a regular 200 m x 200 m resolution UTM grid. Like station data, gridded data are also available in all the different temporal scales from 5-minutes to annual. **Figs. 6a,b** show two examples for gridded daily precipitation data, **Figs. 6c,d** show hourly precipitation, and **Fig 7** shows 5-minute precipitation and temperature. The dates of the images are in the range of dates shown in Figs. 4c, 4d, and 5, thus a direct comparison to the station data is possible.

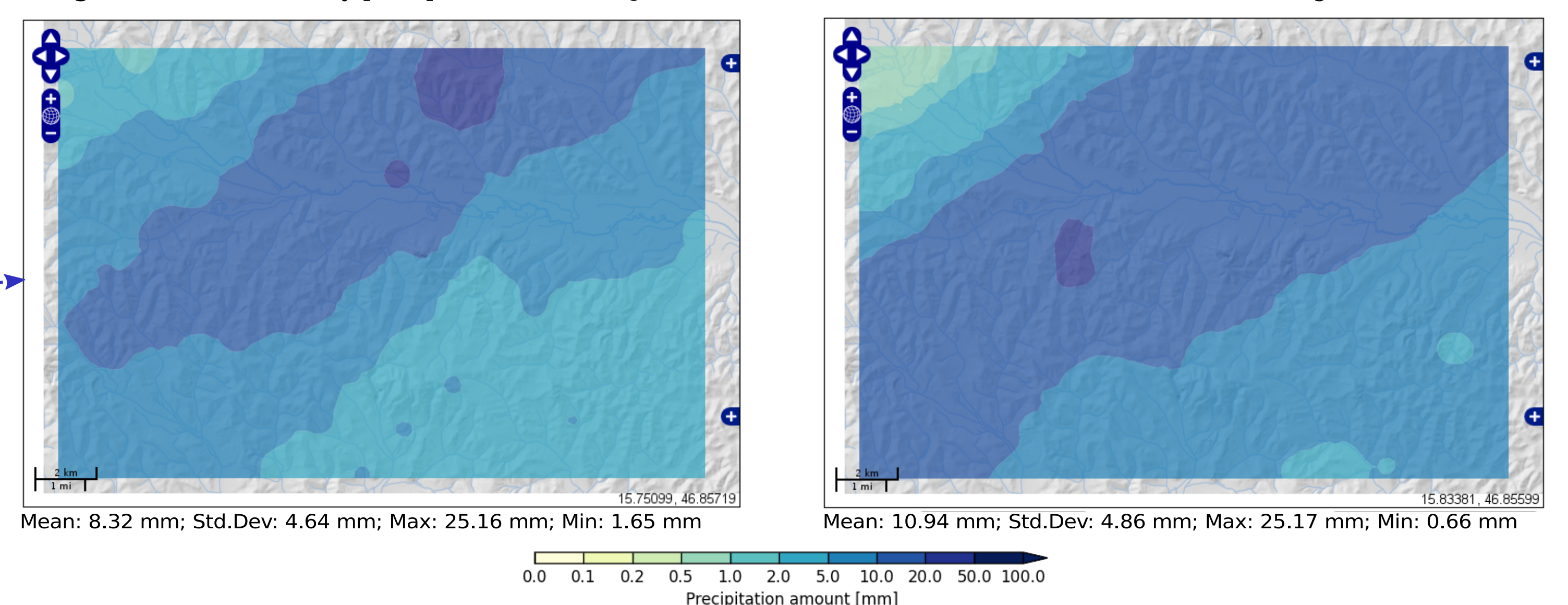
### Daily precipitation data

**Figs. 6a and 6b:** Daily precipitation sums at June 23 (left) and June 24 (right), 2009



### Hourly precipitation data

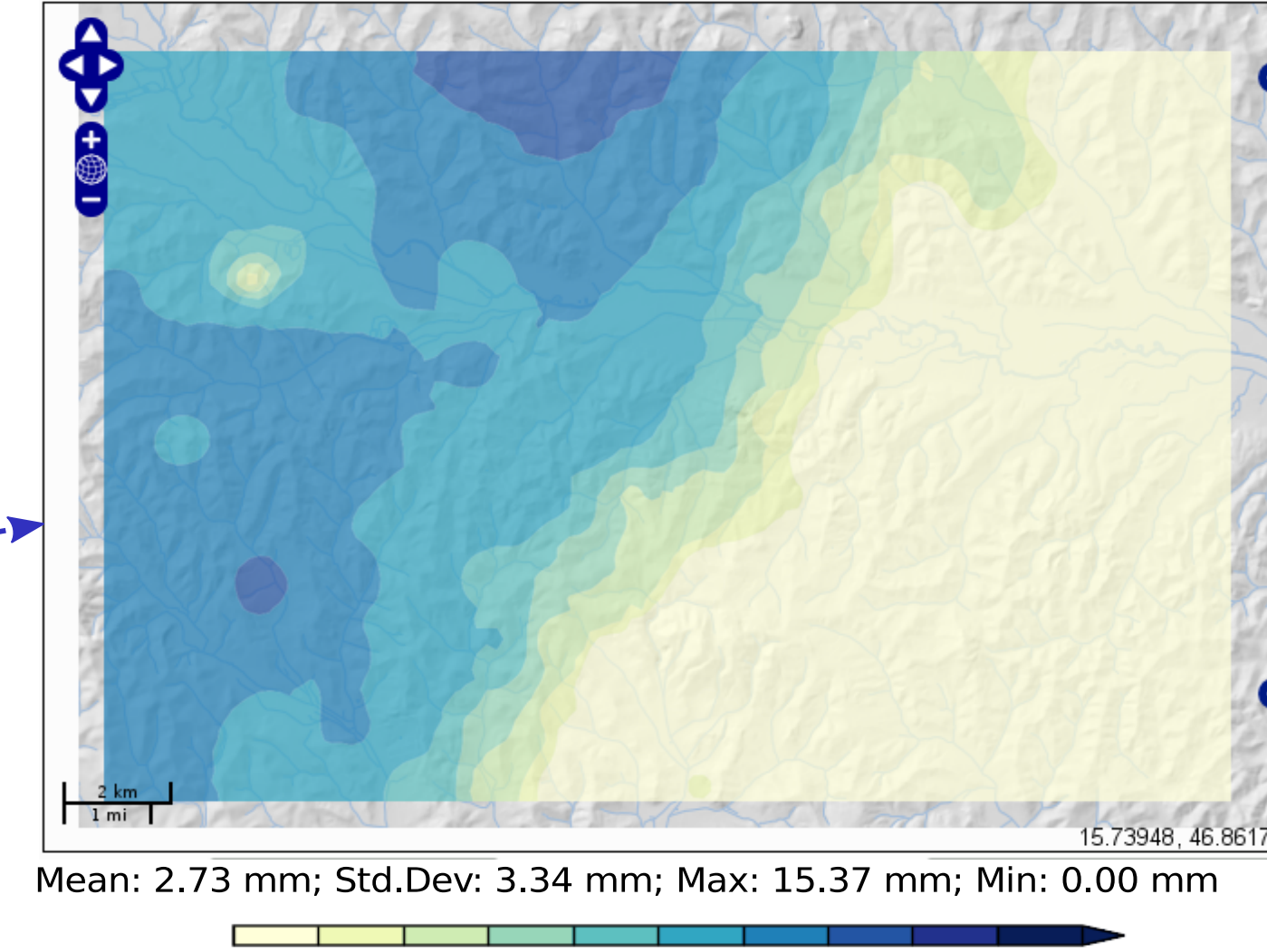
**Figs. 6c and 6d:** Hourly precipitation sums at June 24, 2009: 08:00 - 09:00 (left) and 10:00 - 11:00 (right)



### 5-minute precipitation and temperature data

**Fig 7a** shows a 5-minute precipitation sum of the convective event depicted in Fig. 5. The corresponding temperature anomaly grid is shown in **Fig. 7b**.

**Fig. 7a:** 5-minute precipitation sum at Aug. 19, 2011 13:40 - 13:45 UTC



**Fig. 7b:** Temperature data at Aug. 19, 2011, 13:45 UTC

