STSM Scientific Report

COST ACTION ES1404

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STSM Topic:	USING MODIS IMAGES TO ANALYSE SPATIAL AND TEMPORAL DIFFERENCES OF SNOW COVER IN THE SPANISH MOUNTAINS
Host:	Centre d'Etudes Spatiales de la Biosphère (CESBIO)

Background

Snow in Spain is a critical hydrologic and economical resource in many areas that was not enough studied. Satellite remote sensing has become and essential tool for monitoring the variability of the snow cover. The hosting research team headed by Dr. Simon Gascoin has demonstrated experience in processing MODIS data to characterize spatio-temporal variability of snowpack in mountain areas of Spain.

Purpose of the visit

The purpose of this STSM is to learn from Dr. Simon Gascoin and expand him gapfilling methodology to the main mountain ranges of the Iberian Peninsula.

Description of the work carried out during the visit

During the visit we have adapted his algorithms to the different mountain ranges of Spain in order to apply him gapfilling procedure for my study sites. We also have updated the MODIS data to the last dates.

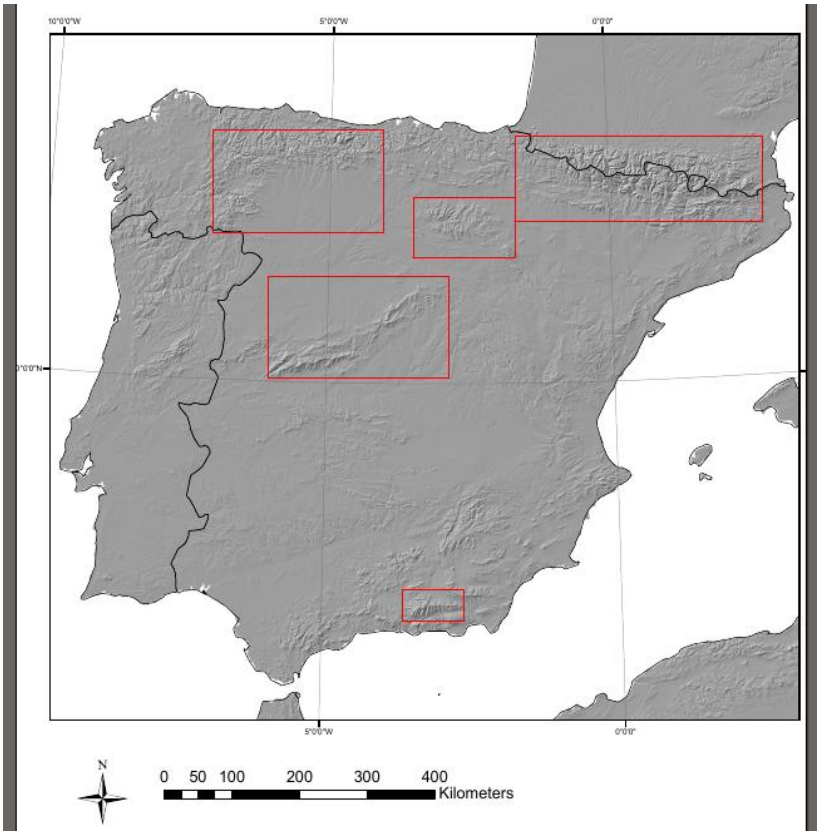

Figure 1: Study areas

Description of the main results obtained

We have obtained and snow cover database from 8-days MODIS data for all the Iberian Peninsula at 500m resolution. We also have obtained snow cover databases for the different mountain ranges of Spain from daily-MODIS data.

With this information we will be able to develop different analysis to characterise the snow cover variability and it relationship with the climate and topography.

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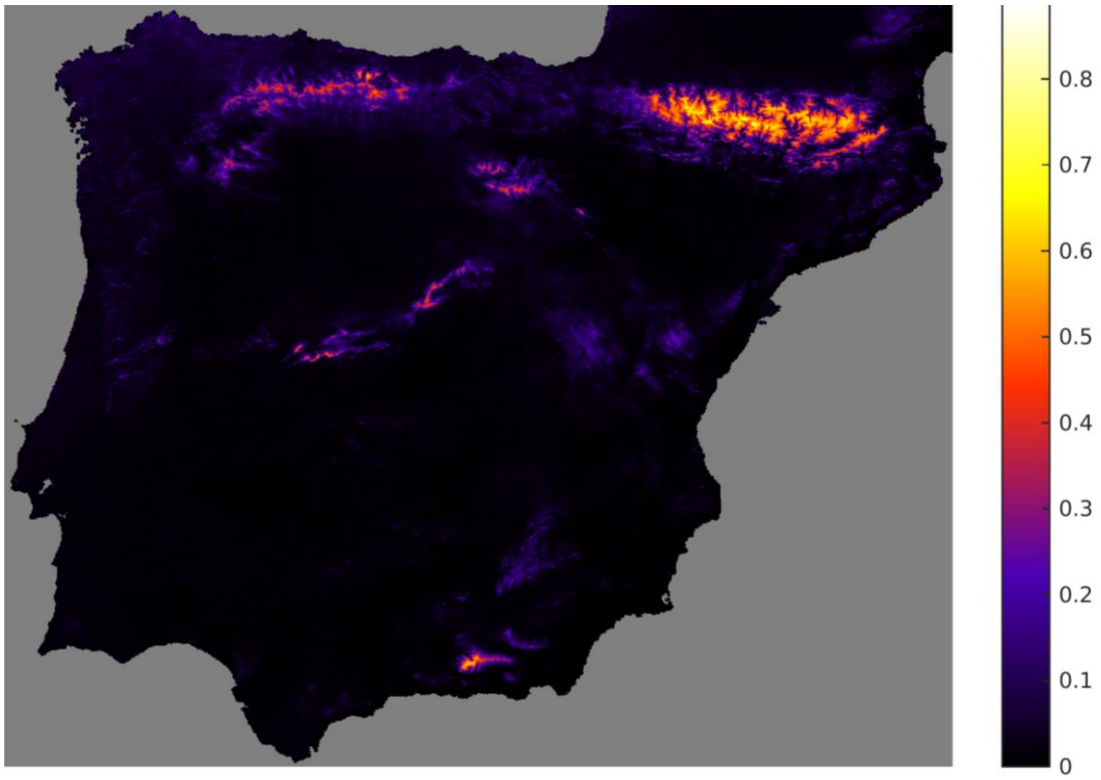

Figure 2: Snow probability from 8-days MODIS data.

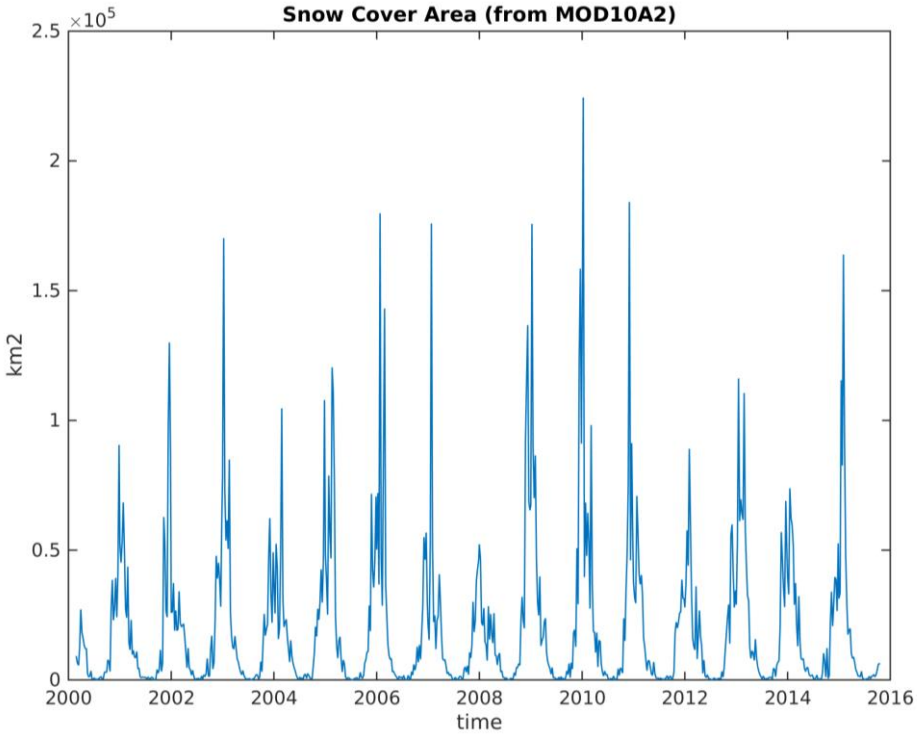

Figure 3: Snow cover time series for Iberian Peninsula from 8-days MODIS data

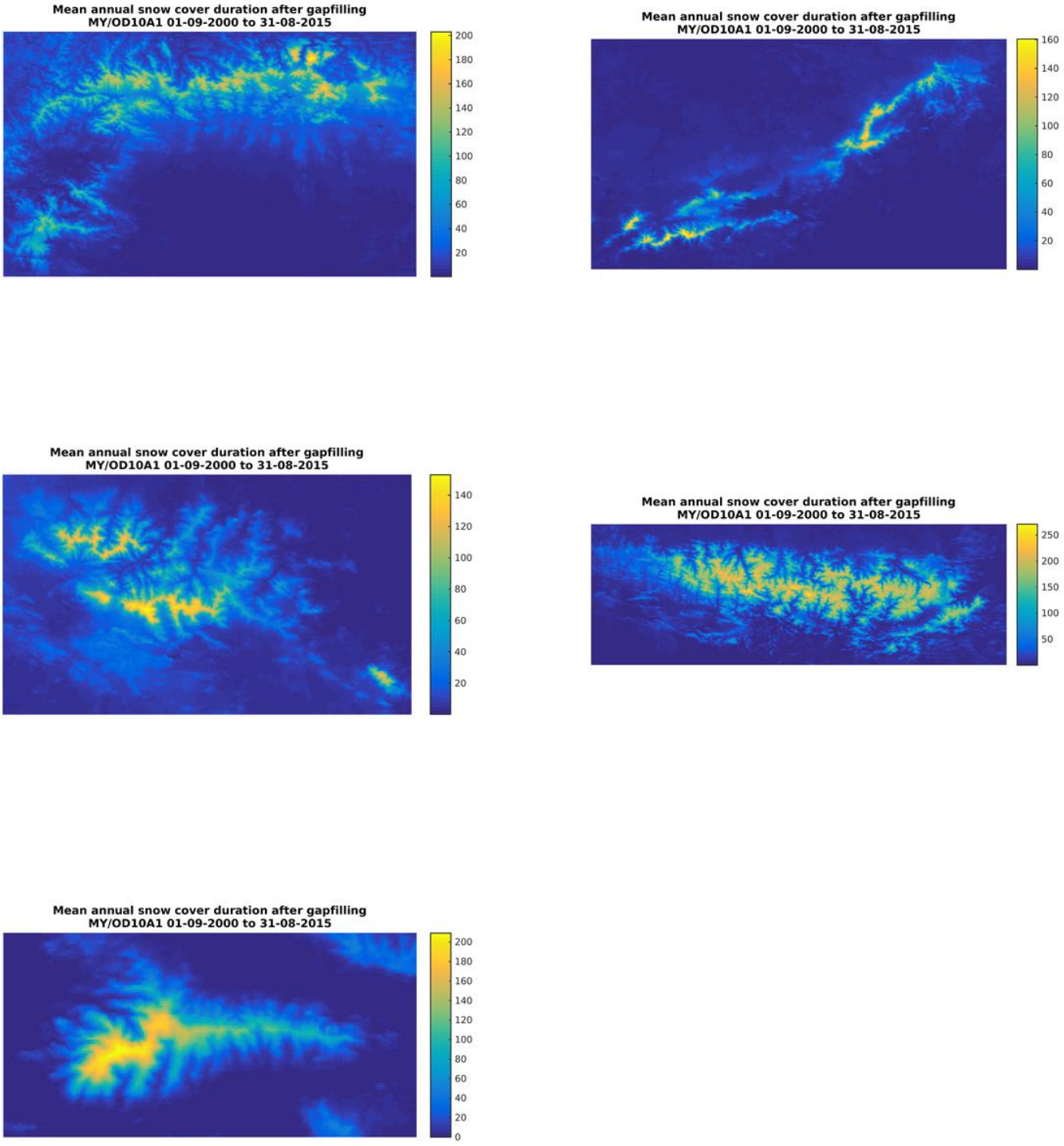

Figure 4: Snow probability maps from 1-day MODIS data

The obtained data allows us to study the snow cover variability with a very good spatio-temporal resolution. The preliminary result shows values of more than 80% of the year with snow in some pixels.

Now is time to process this information in order to obtain a deeper understanding of the snowcover behaviour in Iberian Peninsula

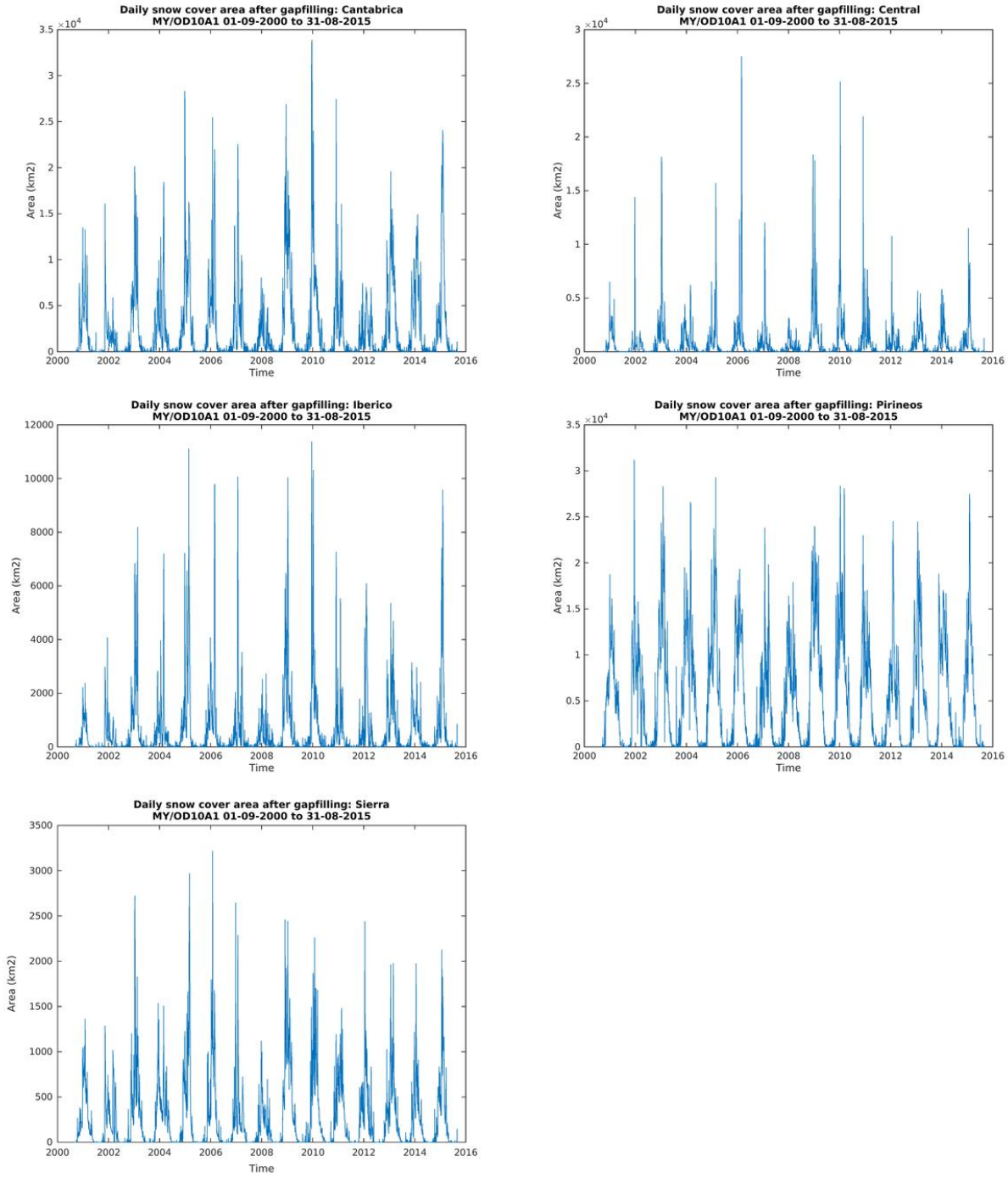

Figure 5:Snow cover time series for the main Iberian mountain ranges from 1-days MODIS data

As we can see on the graphs, each mountain range of Spain have different behaviour from snow cover point of view. This is the result of the great climatic variability of Iberian Peninsula, wich converts Spain in a very interesting place to snow studies.

Future collaboration with host institution

Both institutes are interested in future collaborations, we could collaborate in projects and publications.

Projected publications/articles resulting or to result from the STSM

Most results will be used by myself on my Phd thesis but we are thinking in different publications and conferences where we can use also the generated information.