

Validation and enhancement of Theia Snow Cover Extent products from High Resolution Images



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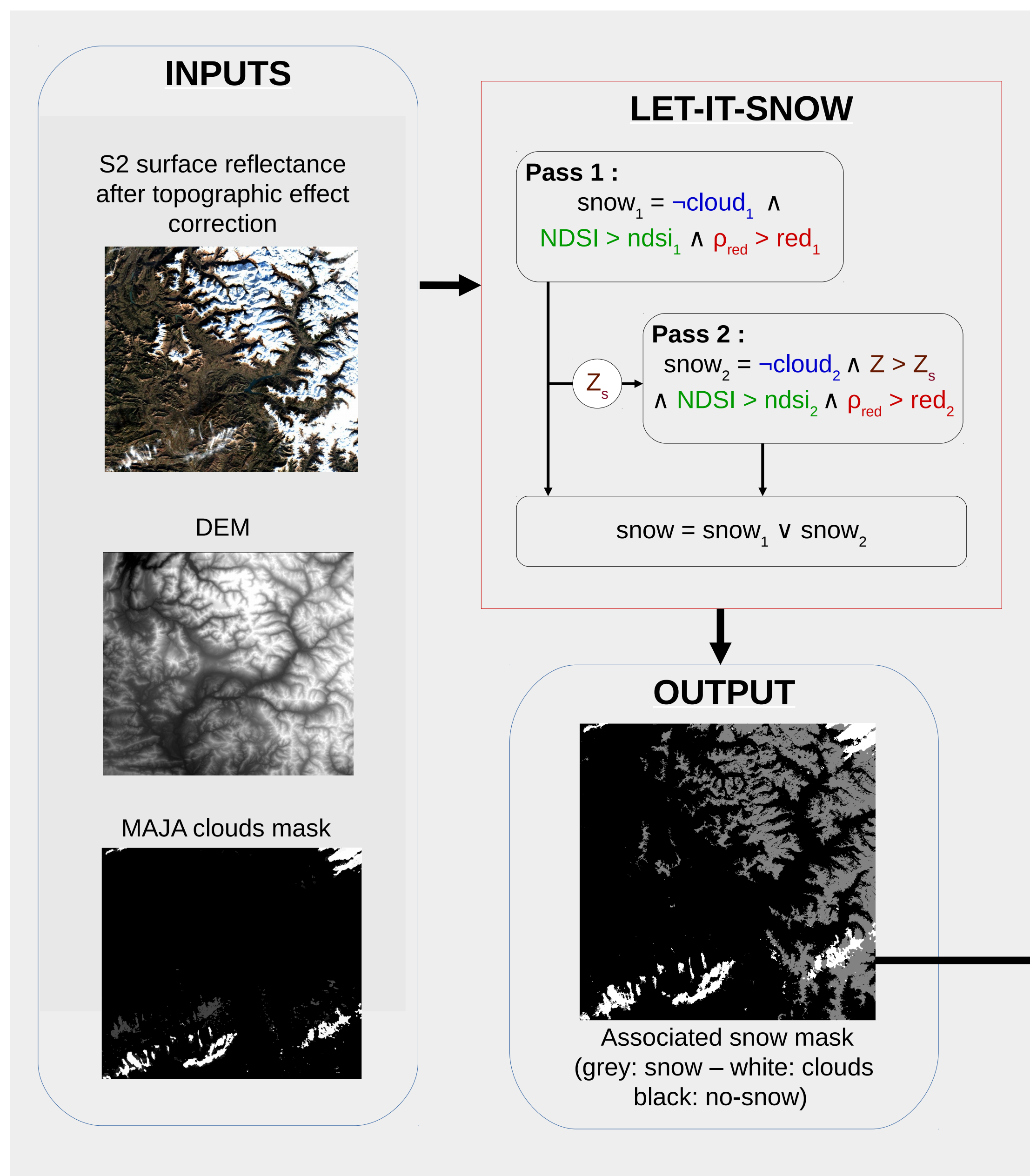
Introduction

Snow cover is a key factor of many ecological, climatological and hydrological processes in cold regions. The monitoring of the snow cover is of particular societal relevance in mountain regions since the seasonal snow melt modifies soil moisture, groundwater recharge and river flow, often providing critical water resources to downstream areas.

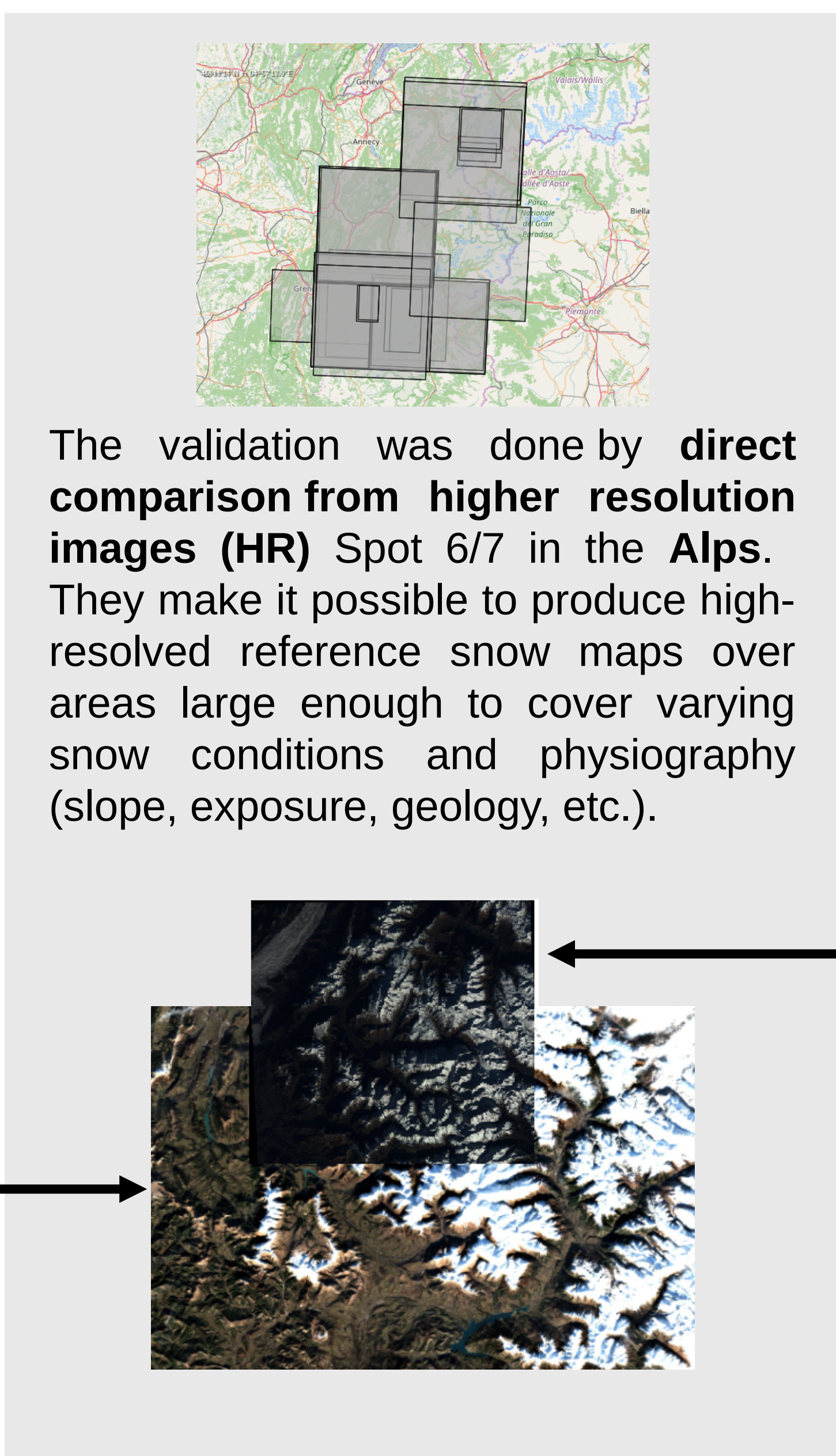
Since 2015, CNES and CESBIO have been developing an algorithm called **Let-It-Snow** (LIS) for an operational snow cover extent product from **Sentinel-2 data**, with a spatial resolution of 20 meters and a temporal resolution of 5 days (in the absence of clouds). Recently, it has been selected for production by CNES on the Theia platform for several mountains in Europe and also for the Atlas in Morocco. **Following the introduction of the algorithmn, an extended large scale validation was needed.**

<https://theia.cnes.fr/> 

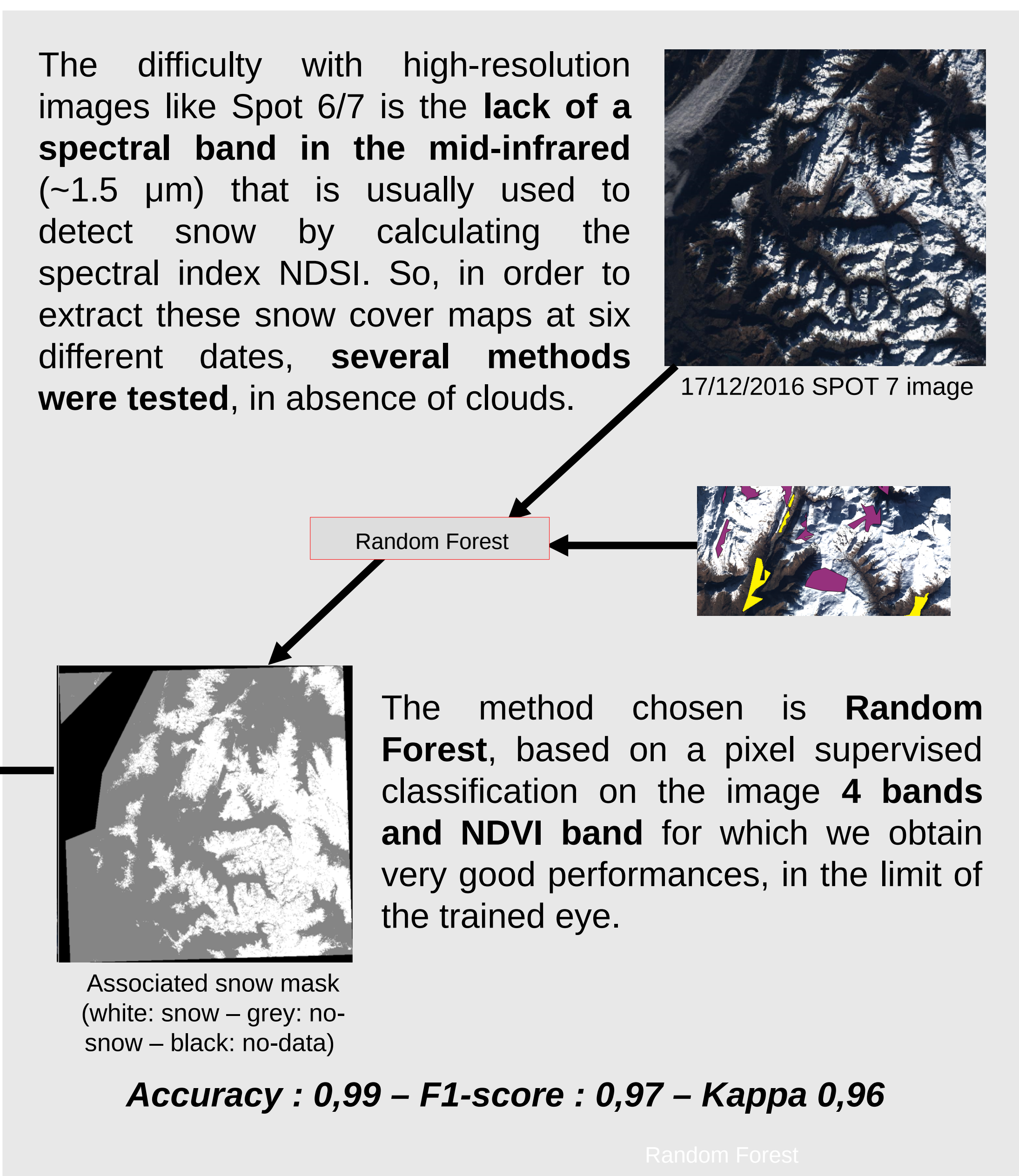
Algorithm Presentation



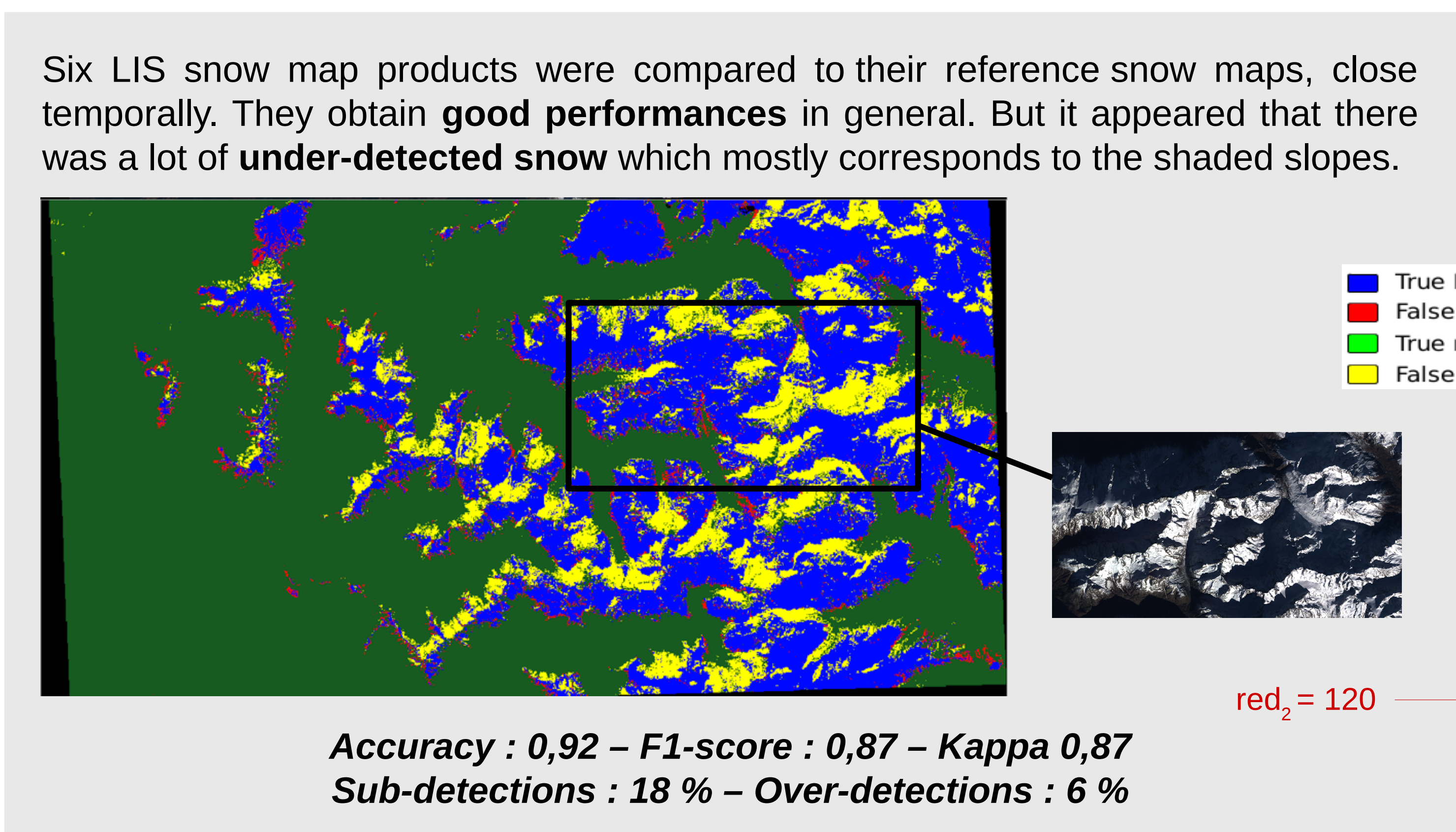
Validation Method



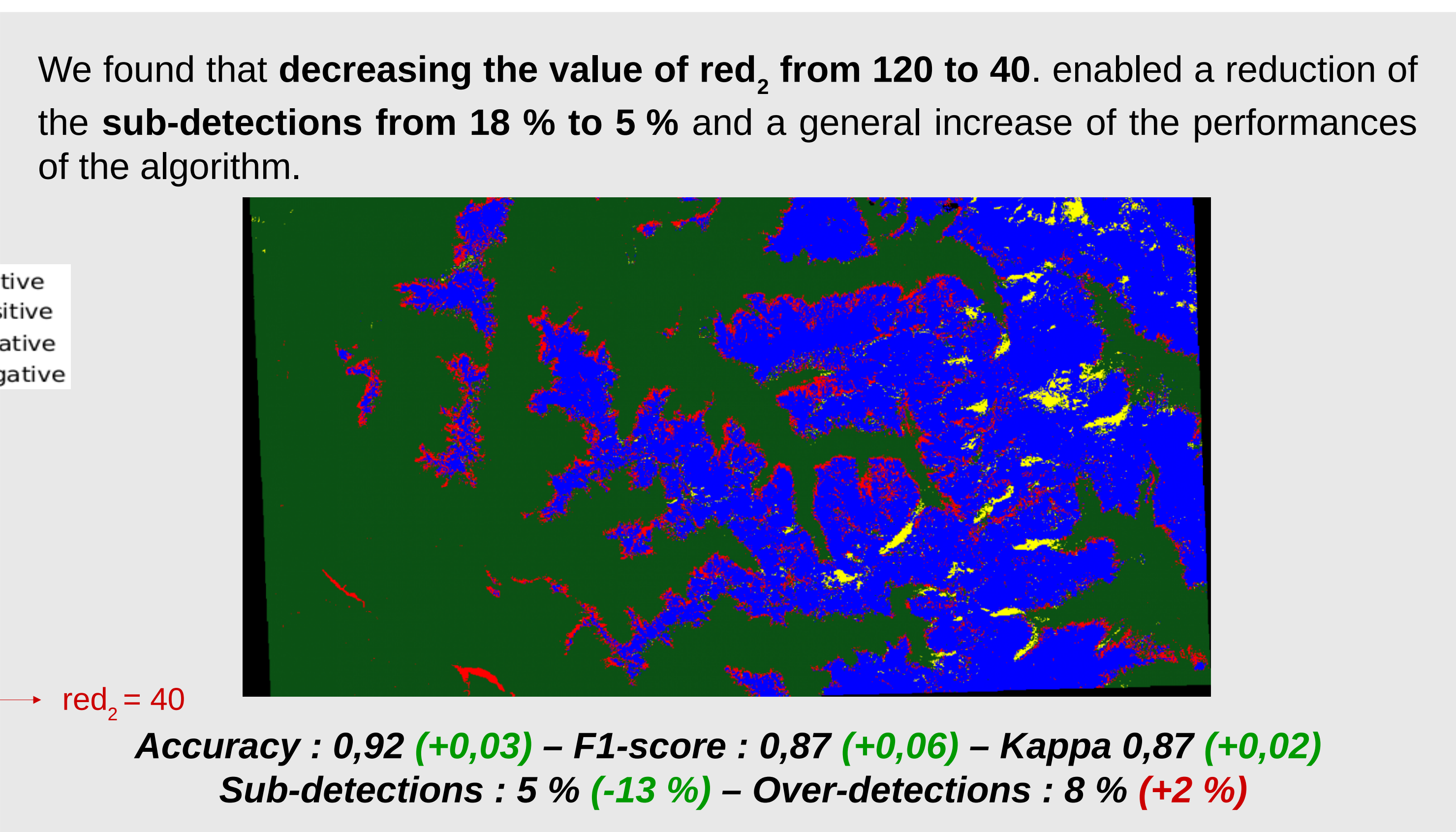
Reference Snow Maps Creation



Results



Improvements



Conclusions

- The study allowed us to validate the algorithm by giving us quantitative data of its performances
- It has allowed the improvements of the snow detection by decreasing the sub-detections by 13 %
- This modification is now implemented in the Theia platform

