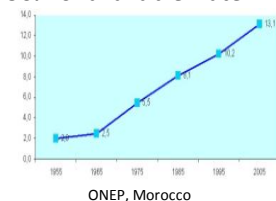


Surface soil moisture data assimilation for irrigation amounts and timing estimation in semi-arid regions

Nadia Ouaadi, Lionel Jarlan, Saïd Khabba, Jamal Ezzahar and Olivier Merlin

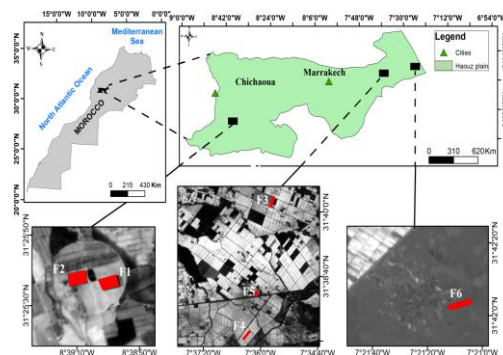
Social issue

Mediterranean region / Agricultural water up to **90%** of available water



→ Optimisation of Irrigation

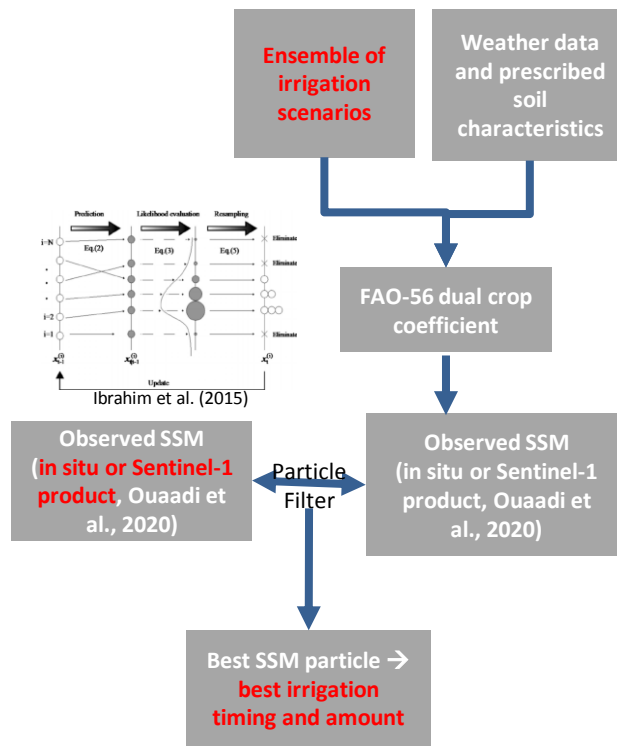
Study area and data



Two drip-irrigated field (2016-2017 et 2017-2018) / Three flood-irrigated fields (2002-2003 and 2015-2016) / One Rainfed wheat (2014-2015 to 2017-2018) for checking

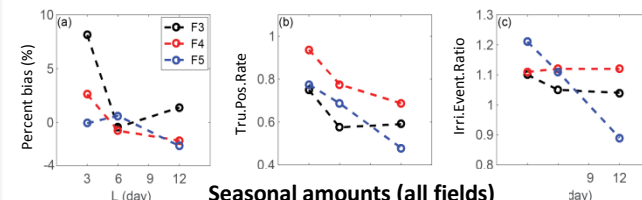
Method

Data assimilation of Surface soil moisture (SSM) into the **FAO-56** double crop coefficient model using a **particle filter** algorithm

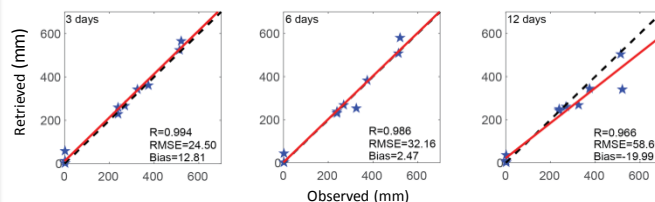


Results: In situ SSM

Intra-seasonal: flood irrigated fields

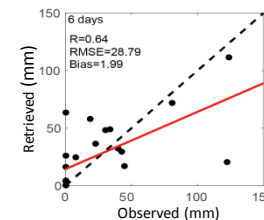


Seasonal amounts (all fields)

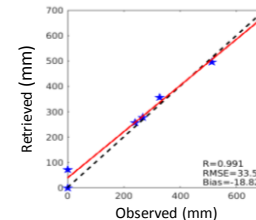


Results: Sentinel-1 SSM

15-days accumulation (drip fields)



Seasonal amounts



Conclusion

- Good estimation of irrigation (amounts and timing)
- Limited data sets
- Irrigation technics need to be known
- Soil prescribed → normalized SSM (SWI) ?