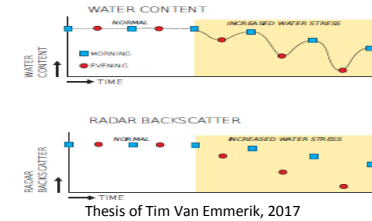


Analysis of diurnal cycles of interferometric coherence measured on an irrigated wheat field in Morocco

Nadia Ouadi, Ludovic Villard, Jamal Ezzahar, Pierre-Louis Frison, Saïd Khabba, Adnane Chakir, Salah Er-Raki and Lionel Jarlan

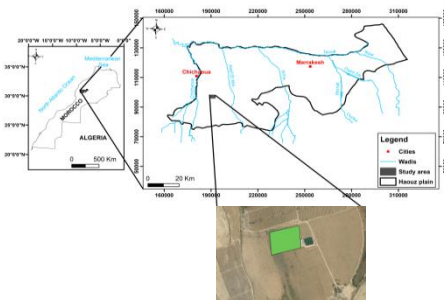
Introduction

Water stress detection using C-band radar observations



Water movement within crops → daily cycle of the backscattering coefficient (Van Emmerik et al., 2015) and of the interferometric coherence (El Idrissi et al., 2019)

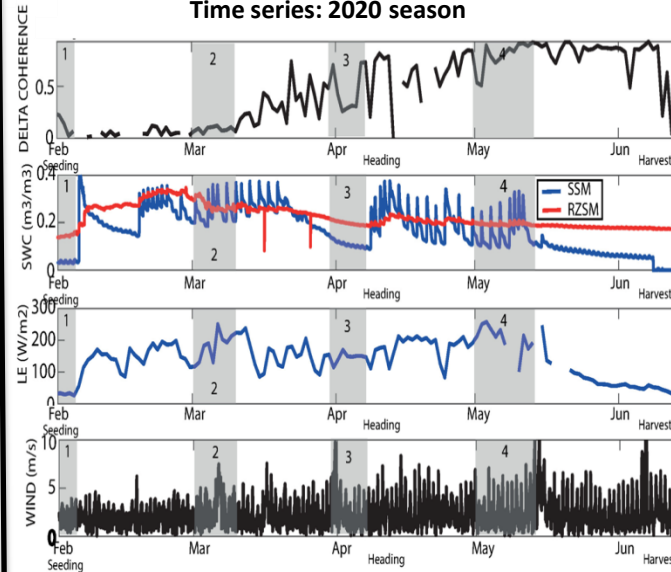
Study area and experimental setup



- Haouz plain, Center of Morocco
- **Six C-band antennas** at the top of a 20 m tower (wheat field) with a **15 mns time step**.
- An eddy-correlation station

Results

Time series: 2020 season

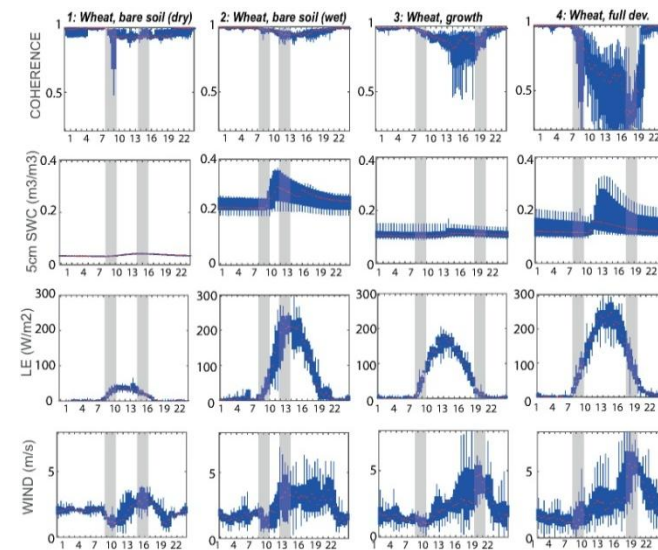


- Start of the season: daily coherence amplitude is almost nil
- The daily amplitude increases with the wheat growth
- Constant until the end of the season when it drops at harvest time.

Conclusion

- The daily average evolution of coherence is related to the physiological activity of wheat at dawn, while wind may govern its change in the afternoon
- Monitoring of the crops hydric status using C-band data with sub-diurnal observations

Average Diurnal cycles for four key periods



- Bare soil periods / diurnal evolution related to SSM.
- Coherence drop at dawn / latent heat flux increases
- Minimum values at the end of the afternoon / strong winds during periods 3 and 4