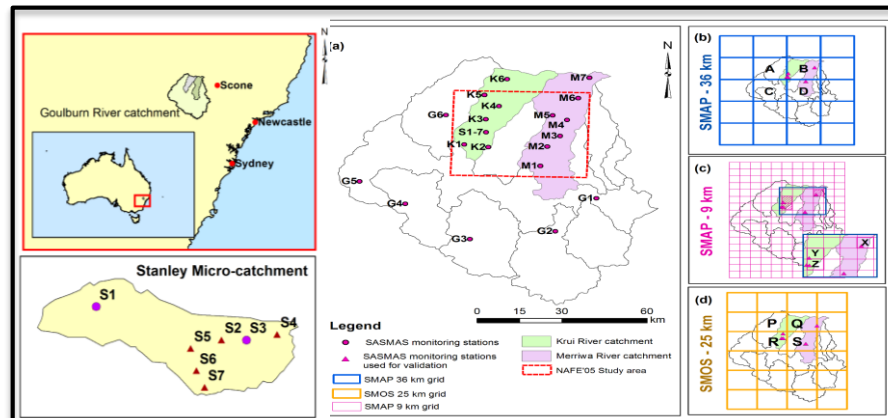


# An in-situ data based model to downscale radiometric satellite soil moisture products

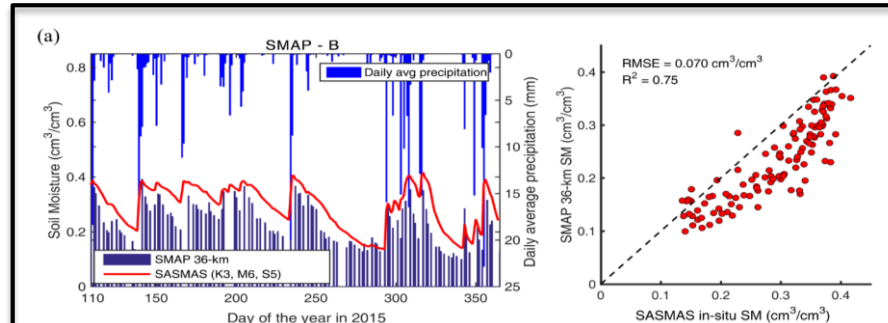
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Lakshmi, J.P. Walker

Improve the **spatial resolution**  
of **SMAP 36 km** and **SMOS 25**  
**km** near surface **SM** products  
into **1 km**.

**Regression tree approach**  
based on the **thermal inertia**  
relationship using **long term in-**  
**situ data**.



1. Goulburn River catchment (Australia),  
SASMAS In-Situ Network, and NAFE 05 Soil  
Moisture Data.



2. Comparison between SMAP 36-km SM  
products and SASMAS in-situ data.



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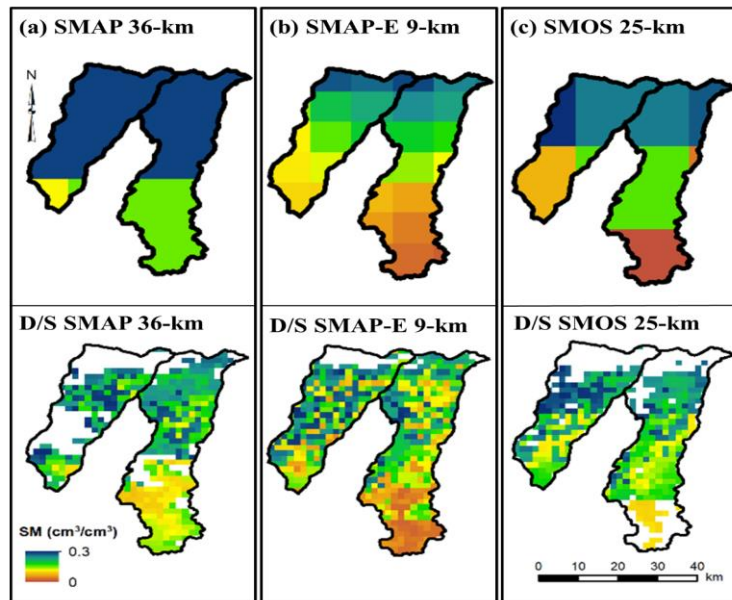
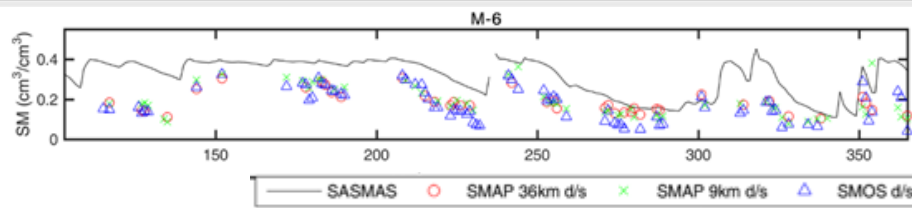


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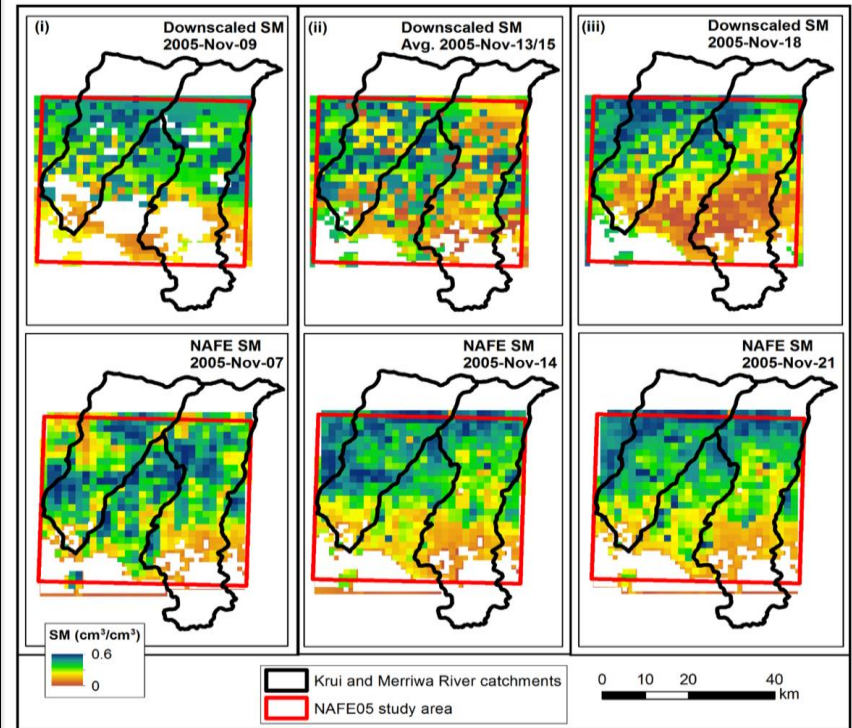


MONASH  
University





**3. Temporal variability of SM and Spatial variability of SM across Krui and Merriwa River catchments (28th June 2015)**



**4. Comparison of the downscaled soil moisture products with NAFE'05 airborne dataset**

1. The downscaled SMAP 36 km, SMAP-E 9 km and SMOS 25 km SM products showed **ubRMSEs of 0.06, 0.07 and 0.05  $\text{cm}^3/\text{cm}^3$** , respectively, against the in-situ data.

2. **An RMSE of 0.07  $\text{cm}^3/\text{cm}^3$**  was observed between the downscaled SM against the passive airborne L-band retrievals.