

CSIRO A&F (yuri.shendryk@csiro.au)

Innovative deployment of drones in agriculture

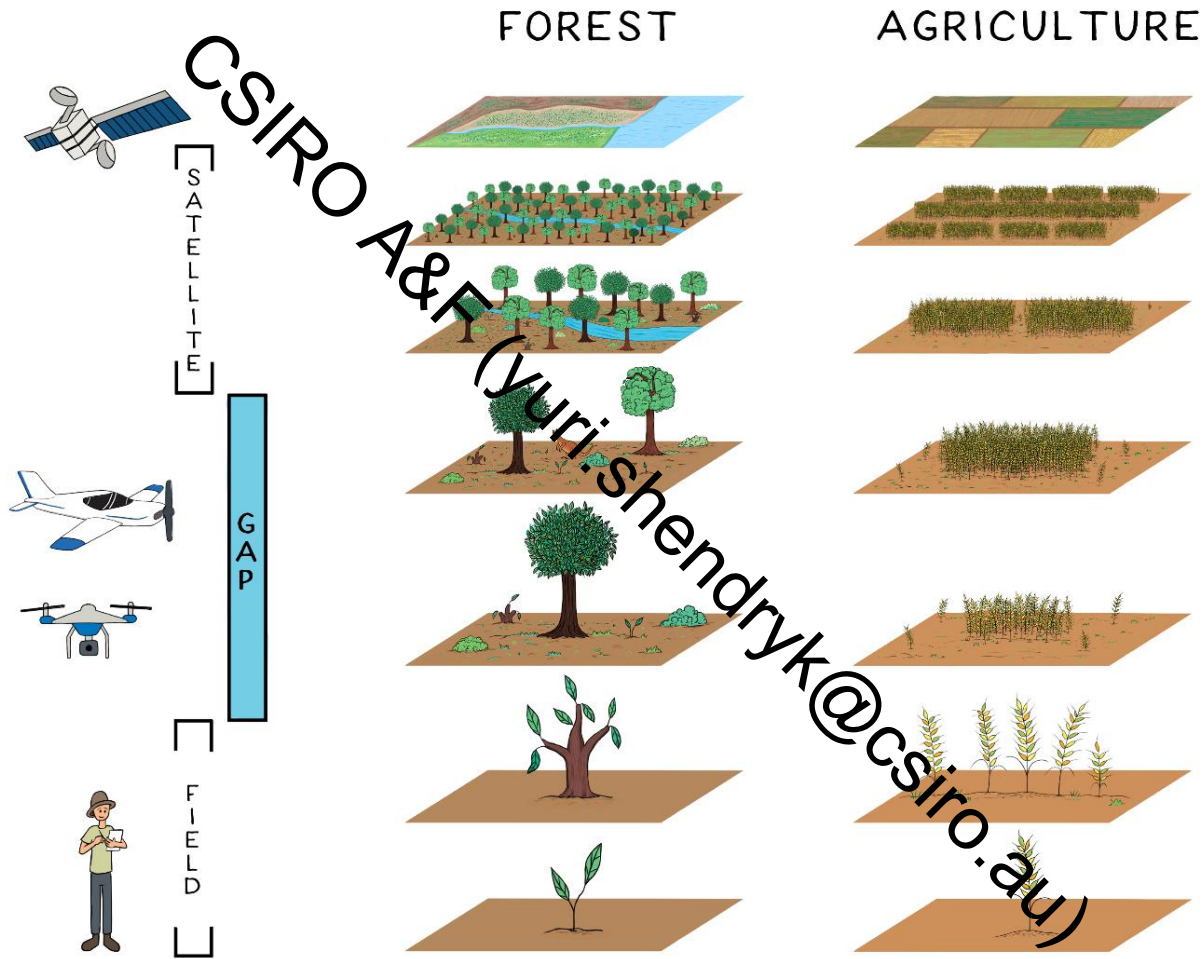
AGRICULTURE AND FOOD
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Yuri Shendryk | FCDrones | 19 June 2019



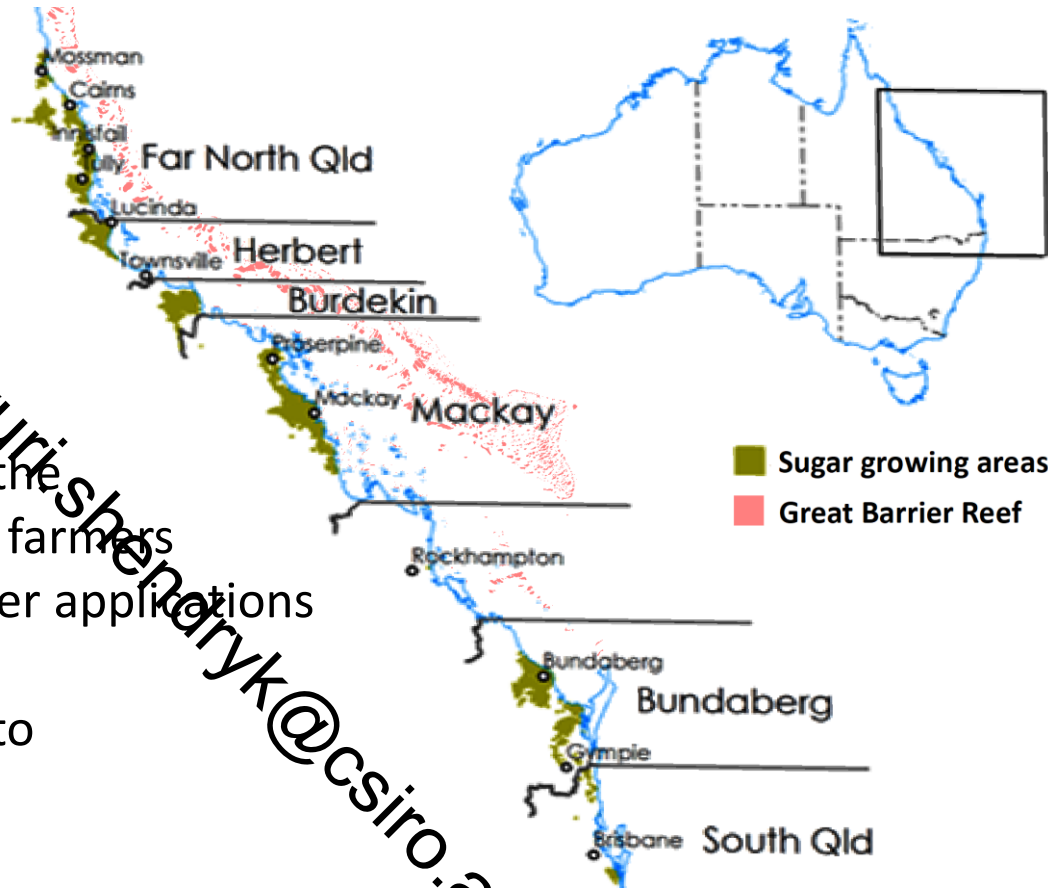
@i_shendryk





Threats to the Reef

1. Great Barrier Reef is affected by agricultural pollutants due to overfertilization
2. Provision of timely information on the condition of the crop will help cane farmers make better decisions about fertiliser applications
3. Remote sensing is a promising tool to provide such information



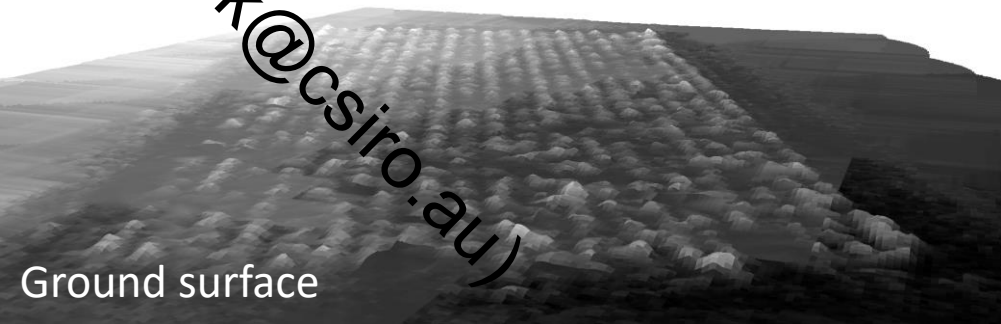
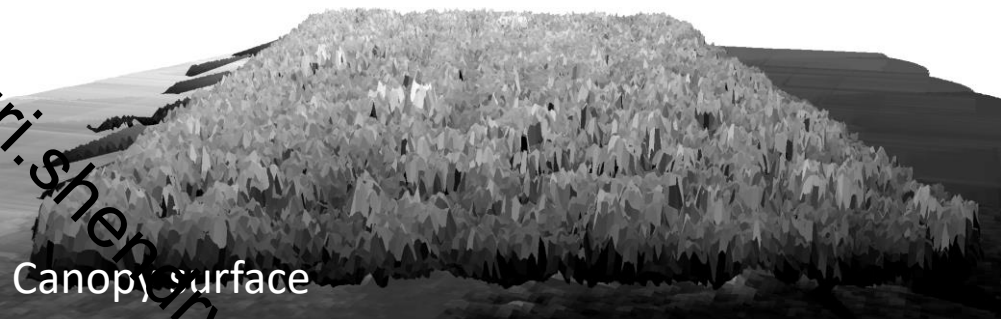
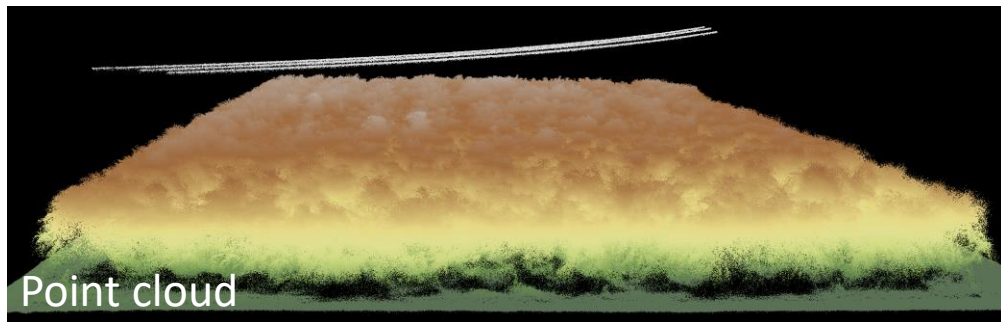
Drone system

- Multispectral imagery (MicaSense Altum)



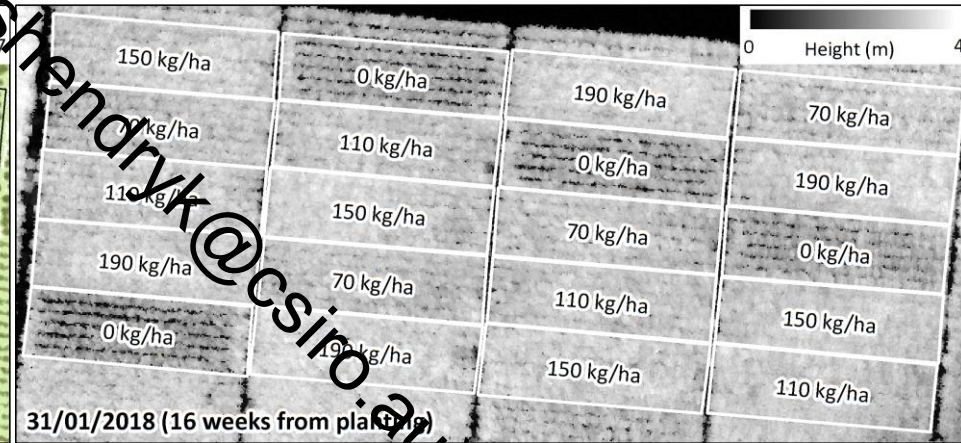
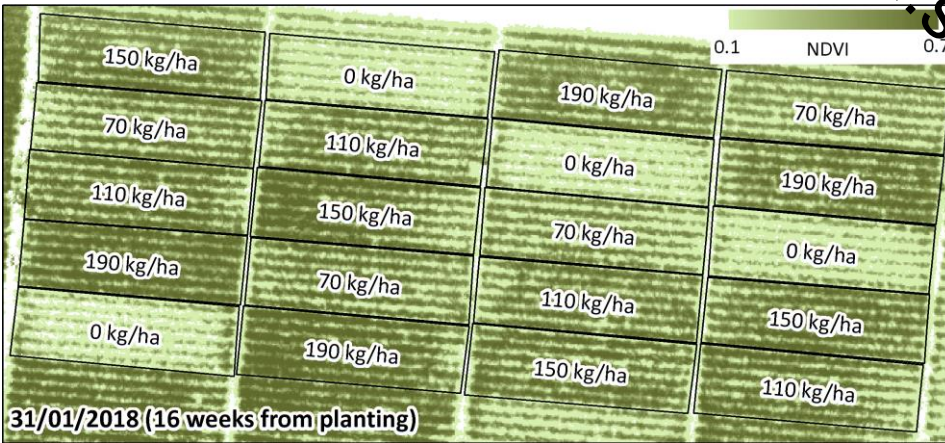
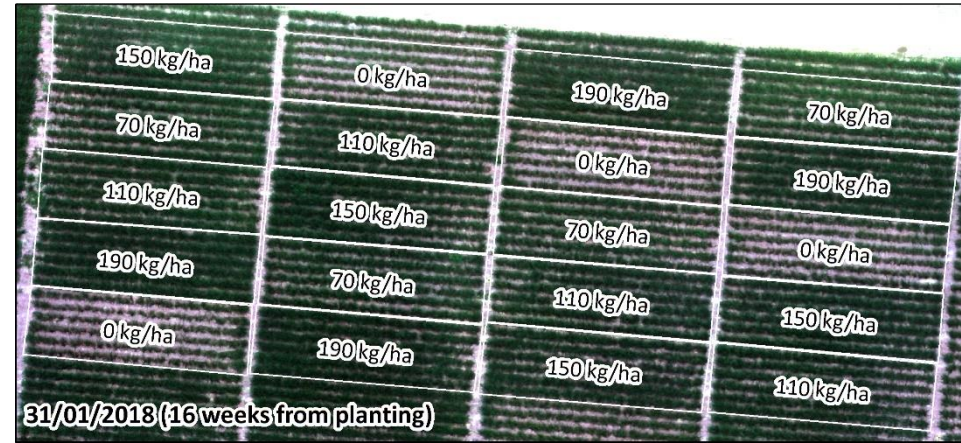
Drone system

- LiDAR (Emesent)



Nitrogen trials

- Four nitrogen (N) trials
- UAV survey every 6 weeks
 - LiDAR scans
 - Multispectral imagery
 - Stalk/leaf biomass (at harvest)

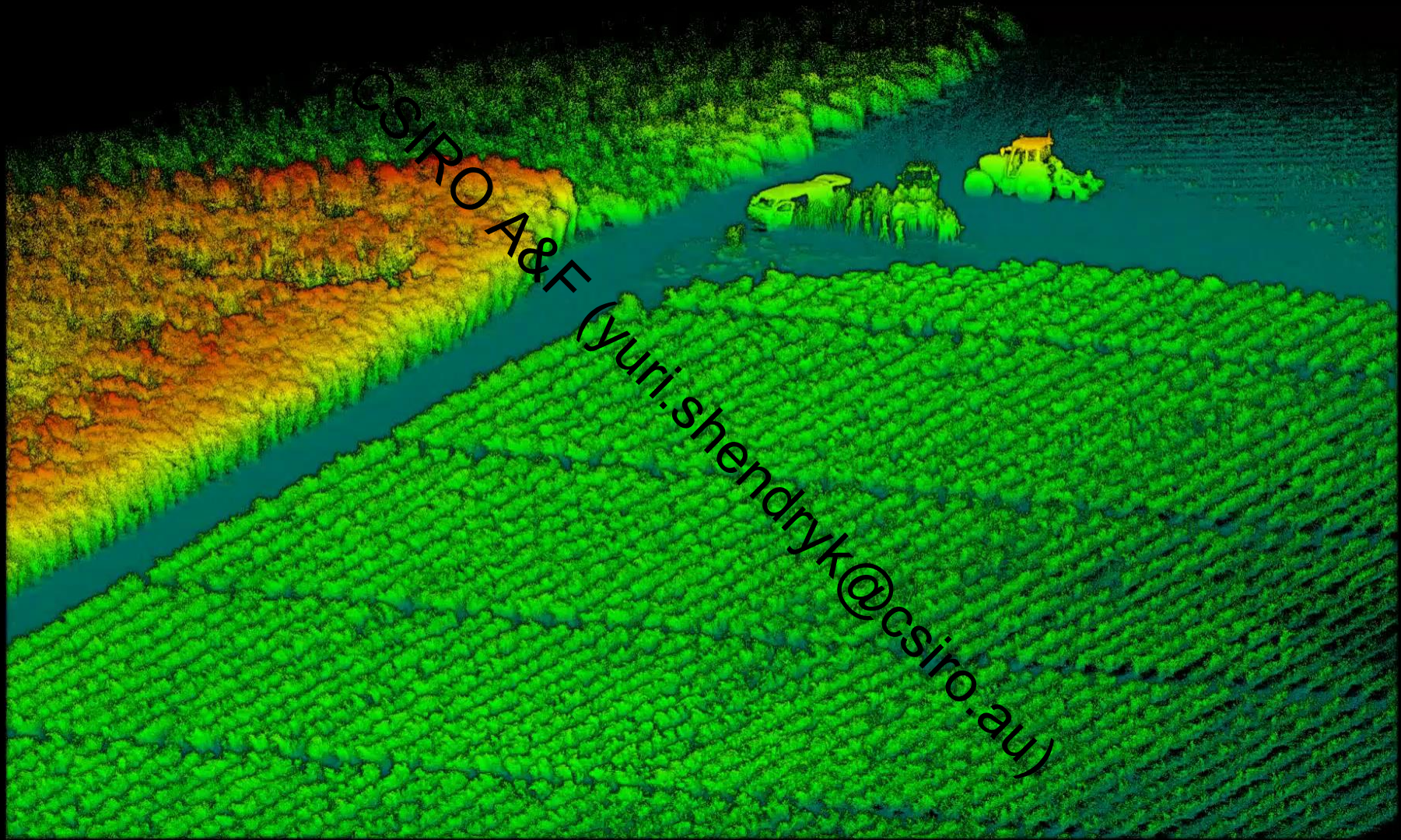


Biomass estimation

Pre-harvest biomass:

- Total
- Leaf
- Stalk
- Number of stalks

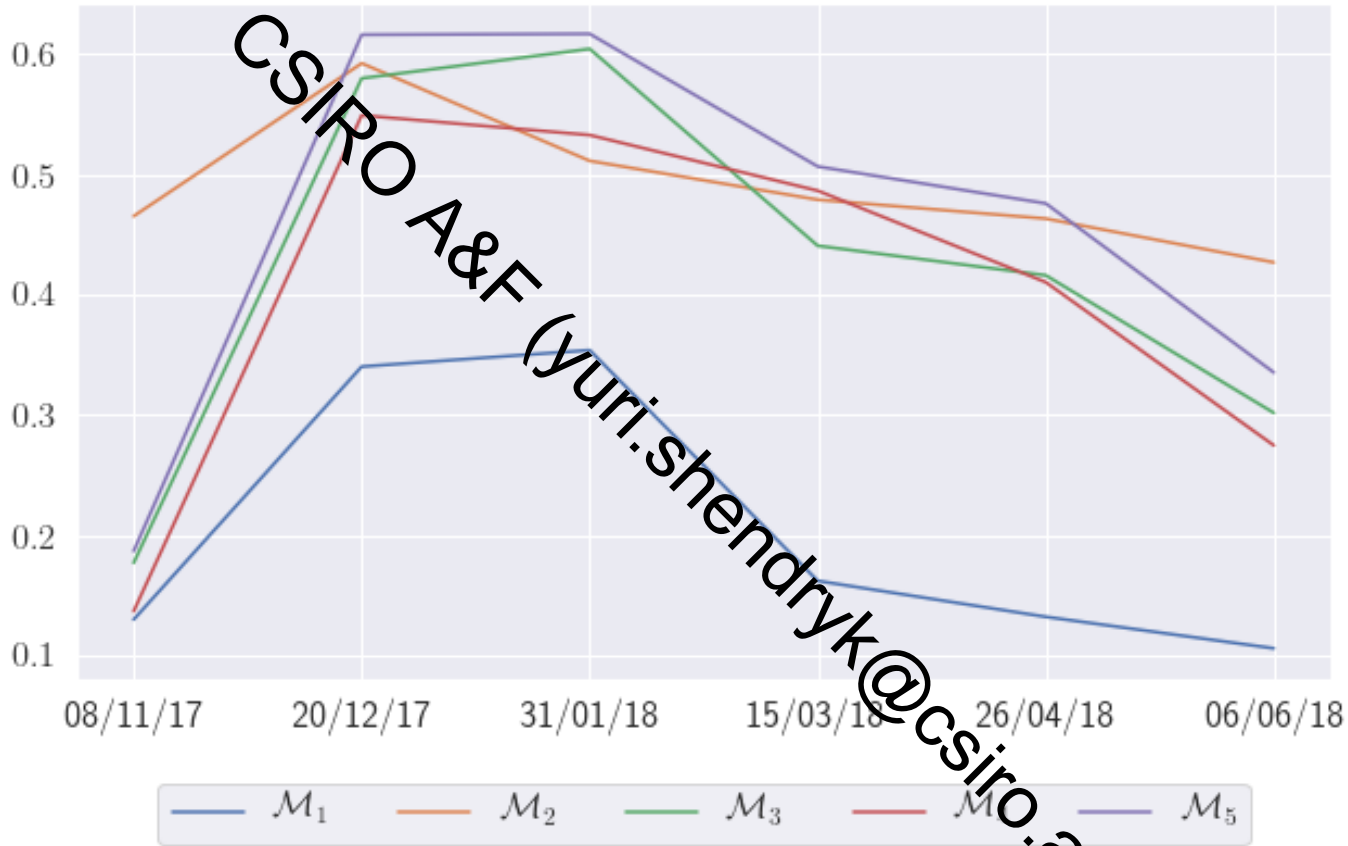




LiDAR through time



Biomass prediction: R^2



M1: maxNDVI

M2: maxNDVI + soil type + N application

M3: Multispectral imagery

M4: LiDAR

M5: Multispectral imagery + LiDAR

