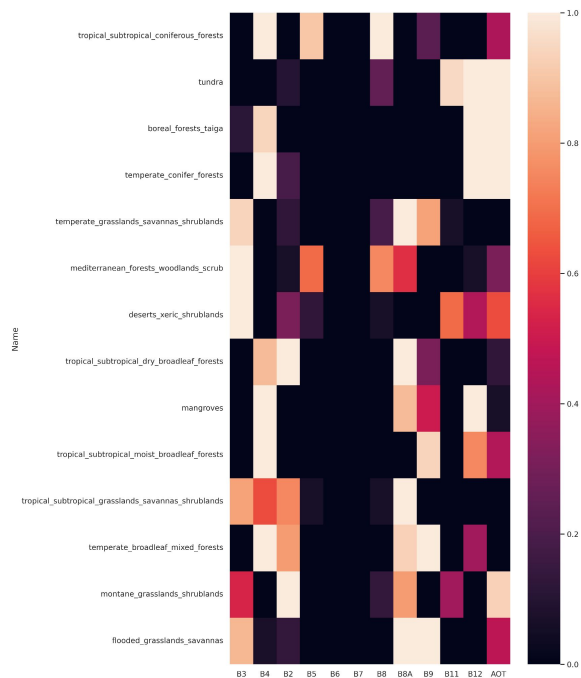


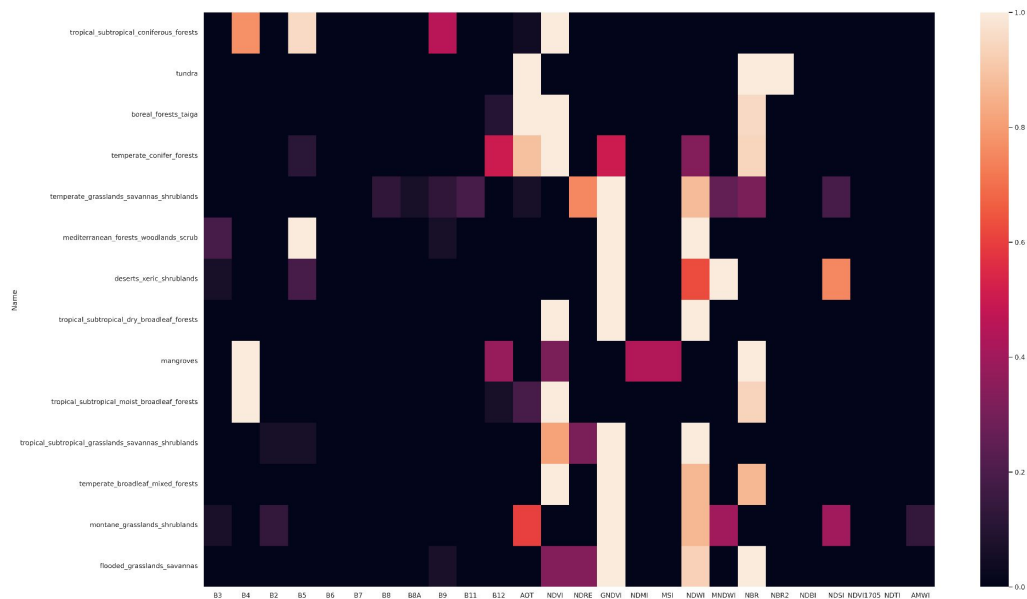


Week 5

Mining Asset Detection (MAD)

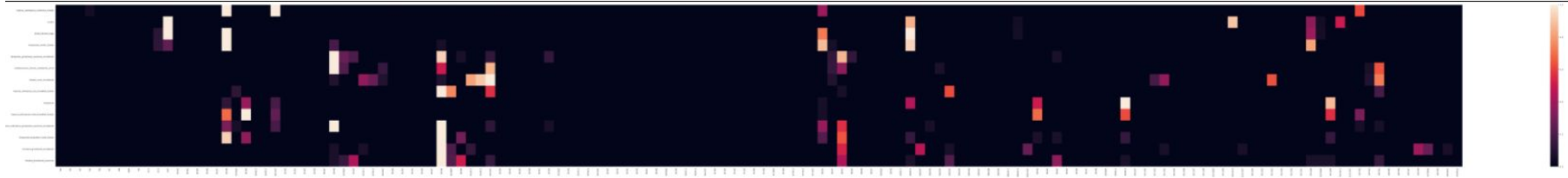


Experiment - Coefficient Measurements - Extended





Experiment - Coefficient Measurements - Super Extended





Experiment - Loss Measurements - Simple

- Only a slight improvement in score

Biome	RMSE Balanced	RMSE Unbalanced
Tundra	0.40	0.42
Taiga	0.41	0.45
Deserts	0.42	0.48
Mangroves	0.31	0.35
Flooded Grasslands	0.33	0.38
Montane Grasslands	0.42	0.45
Temperate Conifer Forests	0.37	0.42
Mediterranean Forests	0.29	0.35
Temperate Grasslands	0.27	0.36
Temperate Broadleaf Forests	0.40	0.41
Tropical Coniferous Forests	0.25	0.32
Tropical Dry Broadleaf Forests	0.31	0.34
Tropical Grasslands	0.32	0.36
Tropical Moist Broadleaf Forests	0.38	0.44



Experiment - Loss Measurements - Extended

- Only a slight difference to using less channels

Biome	RMSE Balanced	RMSE Unbalanced
Tundra	0.41	0.43
Taiga	0.40	0.44
Deserts	0.42	0.44
Mangroves	0.28	0.32
Flooded Grasslands	0.32	0.37
Montane Grasslands	0.42	0.47
Temperate Conifer Forests	0.34	0.41
Mediterranean Forests	0.29	0.35
Temperate Grasslands	0.39	0.40
Temperate Broadleaf Forests	0.27	0.35
Tropical Coniferous Forests	0.25	0.31
Tropical Dry Broadleaf Forests	0.31	0.33
Tropical Grasslands	0.31	0.35
Tropical Moist Broadleaf Forests	0.38	0.43



Experiment - Loss Measurements - Super Extended

Biome	RMSE Balanced	RMSE Unbalanced
Tundra	0.41	0.42
Taiga	0.41	0.46
Deserts	0.43	0.45
Mangroves	0.28	0.32
Flooded Grasslands	0.34	0.39
Montane Grasslands	0.42	0.47
Temperate Conifer Forests	0.38	0.43
Mediterranean Forests	0.28	0.34
Temperate Grasslands	0.39	0.40
Temperate Broadleaf Forests	0.27	0.34
Tropical Coniferous Forests	0.24	0.32
Tropical Dry Broadleaf Forests	0.31	0.34
Tropical Grasslands	0.31	0.35
Tropical Moist Broadleaf Forests	0.38	0.43



Experiment - Loss Measurements - Comparison

Biome	RMSE Balanced Simple	RMSE Balanced Extended	RMSE Balanced Super Extended
Tundra	0.40	0.41	0.41
Taiga	0.41	0.41	0.41
Deserts	0.42	0.43	0.43
Mangroves	0.31	0.28	0.28
Flooded Grasslands	0.33	0.34	0.34
Montane Grasslands	0.42	0.42	0.42
Temperate Conifer Forests	0.37	0.38	0.38
Mediterranean Forests	0.29	0.28	0.28
Temperate Grasslands	0.40	0.39	0.39
Temperate Broadleaf Forests	0.27	0.27	0.27
Tropical Coniferous Forests	0.25	0.24	0.24
Tropical Dry Broadleaf Forests	0.31	0.31	0.31
Tropical Grasslands	0.32	0.31	0.31
Tropical Moist Broadleaf Forests	0.38	0.38	0.38



Future - Talk with James

- There's not really a uniform way to guarantee correctly sized images
 - Instead query large tiles and do the cropping on your own
 - Question of benefit vs. effort
- Move away from GEE
 - ESA has a public access scheme that James has used before, some adjustment needed
 - Should be significantly faster and more flexible to work with their data



Future - Pointers

- Earth Genome's: Earth Index
 - With and outdated GitHub repo showcasing the technology: [github](#)
- Earth index seems to aim at a similar goal
 - Though more ambitious



Future - YOLO Demo

- Allows for quick inference of images for object detection
- Easily trainable for custom labels (in our case a single one)