Tables

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bands <- read\_csv(here("csv", "Sentinel 2 Bands.csv"))

## Rows: 13 Columns: 5

## -- Column specification --------------------------------------------------------  
## Delimiter: ","  
## chr (3): Band, Resolution, Description  
## dbl (2): Central Wavelength (nm), Bandwidth (nm)

##   
## i Use `spec()` to retrieve the full column specification for this data.  
## i Specify the column types or set `show\_col\_types = FALSE` to quiet this message.

set\_flextable\_defaults(font.size = 10, padding = 4)  
  
regulartable(bands) %>%   
 theme\_zebra() %>%   
 autofit() %>%   
 align\_text\_col(align = "center", header = TRUE) %>%   
 align(align = "center") %>%   
 border\_outer() %>%   
 border\_inner()

**Table** **1**: Sentinel 2 Band Descriptions

| **Band** | **Resolution** | **Central Wavelength (nm)** | **Bandwidth (nm)** | **Description** |
| --- | --- | --- | --- | --- |
| B1 | 60 m | 443 | 21 | Ultra blue (Coastal and Aerosol) |
| B2 | 10 m | 490 | 66 | Blue |
| B3 | 10 m | 560 | 36 | Green |
| B4 | 10 m | 665 | 31 | Red |
| B5 | 20 m | 705 | 15 | Visible and Near Infrared (VNIR) |
| B6 | 20 m | 740 | 15 | Visible and Near Infrared (VNIR) |
| B7 | 20 m | 783 | 20 | Visible and Near Infrared (VNIR) |
| B8 | 10 m | 842 | 106 | Visible and Near Infrared (VNIR) |
| B8a | 20 m | 865 | 21 | Visible and Near Infrared (VNIR) |
| B9 | 60 m | 940 | 20 | Short Wave Infrared (SWIR) |
| B10 | 60 m | 1,375 | 31 | Short Wave Infrared (SWIR) |
| B11 | 20 m | 1,610 | 91 | Short Wave Infrared (SWIR) |
| B12 | 20 m | 2,190 | 175 | Short Wave Infrared (SWIR) |

training <- read\_csv(here("csv", "training data.csv"))

## Rows: 5 Columns: 6

## -- Column specification --------------------------------------------------------  
## Delimiter: ","  
## chr (2): Class, Metric  
## dbl (4): 17-Nov, 18-Jan, 18-Nov, 20-Nov

##   
## i Use `spec()` to retrieve the full column specification for this data.  
## i Specify the column types or set `show\_col\_types = FALSE` to quiet this message.

regulartable(training) %>%   
 theme\_zebra() %>%   
 align\_text\_col(align = "center", header = TRUE) %>%   
 autofit() %>%   
 align(align = "center") %>%   
 add\_header\_lines(values = "Polygon Counts") %>%   
 border\_outer() %>%   
 border\_inner()

**Table** **2**: Polygon Counts and Decision Metrics Used in the Generation of Training Data

| **Polygon Counts** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **Class** | **17-Nov** | **18-Jan** | **18-Nov** | **20-Nov** | **Metric** |
| Bare soil | 10 | 11 | 17 | 13 | High Bare Soil Fractions, Low NDVI, Low mARI |
| High Marsh | 5 | 5 | 10 | 7 | High Green Vegetation Fraction, High NDVI, High mARI |
| Mid Marsh | 12 | 7 | 16 | 13 | Moderate-High NDVI, Mixed Green Vegetation Fractions and Bare Soil Fractions |
| Senesced | 8 | 5 | 8 | 5 | High Non-photosynthetic Vegetation Fractions, Low NDVI, High mARI |
| Subtidal | 20 | 7 | 21 | 19 | High Subtidal Fractions, Low NDVI |

gini <- read\_csv(here("csv", "random\_forest\_importance.csv"))

## Rows: 29 Columns: 3

## -- Column specification --------------------------------------------------------  
## Delimiter: ","  
## chr (2): date, variable  
## dbl (1): mean\_decrease\_gini

##   
## i Use `spec()` to retrieve the full column specification for this data.  
## i Specify the column types or set `show\_col\_types = FALSE` to quiet this message.

gini$mean\_decrease\_gini <- round(gini$mean\_decrease\_gini, 2)  
  
gini\_wider <- gini %>%   
 pivot\_wider(values\_from = mean\_decrease\_gini, names\_from = variable) %>%   
 rename(Date = date, "Soil Fraction" = bs\_fraction, "Green Veg Fraction" = gv\_fraction, "Senesced Fraction" = npv\_fraction, "Subtidal Fraction" = subtidal\_fraction, "Shade Fraction" = shade\_fraction, "NDVI" = ndvi, "mARI" = mari, "Digital Terrain" = digital\_terrain)  
   
   
library(officer)

## Warning: package 'officer' was built under R version 4.1.3

regulartable(gini\_wider) %>%   
 theme\_zebra() %>%   
 align\_text\_col(align = "center" , header = TRUE) %>%   
 align(align = "center") %>%   
 border\_outer() %>%   
 border\_inner()

**Table** **3**: Variable Importance Across Dates

| **Date** | **Soil Fraction** | **Green Veg Fraction** | **Senesced Fraction** | **Subtidal Fraction** | **Shade Fraction** | **NDVI** | **mARI** | **Digital Terrain** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Nov-20 | 62.24 | 58.33 | 45.79 | 31.21 | 46.56 | 109.52 | 99.69 |  |
| Nov-18 | 55.01 | 63.01 | 25.91 | 50.83 | 20.55 | 60.63 | 17.14 |  |
| Jan-18 | 31.07 | 43.72 | 41.79 | 28.53 | 8.96 | 17.28 | 4.87 | 23.17 |
| Nov-17 | 40.61 | 94.05 | 60.13 | 23.08 | 34.99 | 83.23 | 21.95 |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Class** | **Nov. 2017** | | **Jan. 2018** | | **Nov. 2018** | | **Nov. 2020** | |
| **User's Error** | **Producer's Error** | **User's Error** | **Producer's Error** | **User's Error** | **Producer's Error** | **User's Error** | **Producer's Error** |
| Bare Soil | 0.103 | 0.062 | 0.038 | 0.05 | 0.020 | 0 | 0.061 | 0.013 |
| High Marsh | 0 | 0 | 0.017 | 0.048 | 0 | 0 | 0.006 | 0.011 |
| Mid Marsh | 0.030 | 0.072 | 0.171 | 0.105 | 0 | 0.024 | 0.071 | 0.064 |
| Senesced Veg. | 0.019 | 0.088 | 0 | 0 | 0.018 | 0 | 0 | 0.009 |
| Subtidal/Water | 0.12 | 0.029 | 0.1 | 0.1 | 0 | 0 | 0.061 | 0.089 |
|  | Accuracy | Kappa | Accuracy | Kappa | Accuracy | Kappa | Accuracy | Kappa |
| Final Model Accuracy | 0.995 | 0.993 | 0.930 | 0.911 | 0.956 | 0.943 | 0.971 | 0.963 |