**Supervised Land Use Land Cover Classification**

**Purpose:** To create a random forest classifier to identify active aquaculture ponds, dry aquaculture ponds, and other land uses on a Landsat Satellite imagery. We use field observations and high-resolution Sentinel 2 imagery for reference data. This supplementary includes the code used, and the accuracy results of the supervised classification.

**Code**: (Google Earth Engine) - 1\_LULCClassification\_Code.txt

**Hyperparameter tuning:** We use 50 trees based on the following result:

A graph with lines and dots

AI-generated content may be incorrect.

**Final model accuracy results**:

Confusion matrix:

[[75,4,0],[2,41,0],[1,0,44]]

0: [75,4,0]

0: 75

1: 4

2: 0

1: [2,41,0]

0: 2

1: 41

2: 0

2: [1,0,44]

0: 1

1: 0

2: 44

Overall Accuracy:

0.96

Producers Accuracy:

List (3 elements)

0: [0.95]

1: [0.95]

2: [0.98]

Consumers Accuracy:

0: 0.96

1: 0.91

2: 1

Kappa:

0.93

**Comparing accuracy outputs with alternate pixel reducers**

The accuracy results with the 30th percentile (listed in the previous section in more detail) are the best among the various reducers tested, closely followed by the geometric median. For the CoSal-SA model, we have therefore employed the 30th percentile.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Accuracy measure** | **Percentile (30)** | **Geometric median** | **Median/Percentile (50)** | **Percentile (70)** |
| Overall accuracy | 0.96 | 0.94 | 0.92 | 0.90 |
| Kappa | 0.93 | 0.91 | 0.88 | 0.84 |
| Producers accuracy | 0: [0.95]  1: [0.95]  2: [0.98] | 0: [0.95]  1: [0.93]  2: [0.94] | 0: [0.97]  1: [0.85]  2: [0.90] | 0: [0.95]  1: [0.80]  2: [0.90] |
| Consumers accuracy | 0: [0.96]  1: [0.91]  2: [1] | 0: [0.95]  1: [0.93]  2: [0.94] | 0: [0.92]  1: [0.85]  2: [0.98] | 0: [0.91]  1: [0.86]  2: [0.91] |