Band combination selection:

The Optimum Index Factor (OIF) is a statistical measure that enables the selection of the most suitable combination of three bands for a satellite image. The combination that provides the greatest amount of unique "information" with the least amount of "duplication" among all possible 3-band combinations is considered the optimal one. Based on Optimum Index Factor (OIF), the band combination with high OFI is taken as suitable for our current study.

OFI Table (2022 image )

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Band Combinations | Sum Std. | Sum Corr. | OIF |
| 0 | 123 | 0.053543 | 2.870344 | 0.018654 |
| 1 | 124 | 0.063543 | 1.080195 | 0.058825 |
| 2 | 125 | 0.073962 | 2.249787 | 0.032875 |
| 3 | 126 | 0.067563 | 2.589046 | 0.026096 |
| 4 | 134 | 0.070911 | 0.977272 | 0.07256 |
| 5 | 135 | 0.08133 | 2.355679 | 0.034525 |
| 6 | 136 | 0.074931 | 2.69509 | 0.027803 |
| 7 | 145 | 0.09133 | 0.977573 | 0.093425 |
| 8 | 146 | 0.084931 | 0.942668 | 0.090097 |
| 9 | 156 | 0.09535 | 2.503083 | 0.038093 |
| 10 | 234 | 0.073505 | 1.105656 | 0.066481 |
| 11 | 235 | 0.083924 | 2.249074 | 0.037315 |
| 12 | 236 | 0.077525 | 2.594256 | 0.029883 |
| 13 | 245 | 0.093924 | 1.000736 | 0.093855 |
| 14 | 246 | 0.087525 | 0.9716 | 0.090084 |
| 15 | 256 | 0.097945 | 2.297027 | 0.04264 |
| 16 | 345 | 0.101292 | 0.973611 | 0.104038 |
| 17 | 346 | 0.094893 | 0.944628 | 0.100456 |
| 18 | 356 | 0.105312 | 2.478869 | 0.042484 |
| 19 | 456 | 0.115312 | 1.268258 | 0.090922 |

Co-Relation Matrix:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Band 1 | Band 2 | Band 3 | Band 4 | Band 5 | Band 6 |
| 0 | 1 | 0.959891 | 0.952582 | 0.179987 | 0.730247 | 0.847547 |
| 1 | 0.959891 | 1 | 0.95948 | 0.317338 | 0.727005 | 0.82182 |
| 2 | 0.952582 | 0.95948 | 1 | 0.270517 | 0.812572 | 0.908407 |
| 3 | 0.179987 | 0.317338 | 0.270517 | 1 | 0.530841 | 0.357818 |
| 4 | 0.730247 | 0.727005 | 0.812572 | 0.530841 | 1 | 0.957092 |
| 5 | 0.847547 | 0.82182 | 0.908407 | 0.357818 | 0.957092 | 1 |