**Support: Table 2**

The *R2* of PCA-ANNs models for four parameters analysis using R, T and R&T spectral bands for two databases. In the analysis process, different train functions of ANN models are chosen to optimize the inversion results.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Separated | | | | Together | | | | |
|  | Cab | Car | EWT | LMA | | Cab | Car | EWT | LMA |
| *ANGERS* | | | | | | | | | |
| R | 0.58891 | 0.72692 | 0.51614 | 0.27523 | | 0.64214 | 0.55482 | 0.24804 | 0.20404 |
| T | 0.63933 | 0.64371 | 0.42933 | 0.24573 | | 0.60781 | 0.61681 | 0.41303 | 0.22623 |
| R & T | 0.72091 | 0.72071 | 0.45923 | 0.34553 | | 0.61811 | 0.60521 | 0.20554 | 0.23062 |
| *LOPEX* | | | | | | | | | |
| R | 0.28872 | 0.22042 | 0.19704 | 0.32981 | | 0.26402 | 0.39802 | 0.32612 | 0.48182 |
| T | 0.19044 | 0.10792 | 0.21632 | 0.33542 | | 0.24782 | 0.21933 | 0.19582 | 0.21923 |
| R & T | 0.23092 | 0.26422 | 0.23051 | 0.17752,3 | | 0.34712 | 0.32632 | 0.452 | 0.38473 |

**Support: Table 3**

The corresponding RMSE for **Support Table 2**.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Separated | | | | Together | | | | |
|  | Cab | Car | EWT | LMA | | Cab | Car | EWT | LMA |
| *ANGERS* | | | | | | | | | |
| R | 11.49141 | 2.58322 | 0.00284 | 0.00263 | | 12.24834 | 3.40422 | 0.00324 | 0.20404 |
| T | 14.44353 | 2.68571 | 0.00293 | 0.00253 | | 14.04761 | 3.05341 | 0.00483 | 0.00533 |
| R & T | 11.54581 | 2.50771 | 0.00283 | 0.00213 | | 18.97571 | 4.31171 | 0.00334 | 0.00512 |
| *LOPEX* | | | | | | | | | |
| R | 6.85142 | 1.83262 | 0.00334 | 0.00191 | | 26.33992 | 7.18922 | 0.00482 | 0.00182 |
| T | 26.77584 | 2.96302 | 0.00202 | 0.00242 | | 8.01322 | 2.69113 | 0.00412 | 0.00183 |
| R & T | 8.00352 | 1.98952 | 0.00251 | 0.00382,3 | | 8.04682 | 2.50722 | 0.00572 | 0.00263 |