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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Seasonal average | | | | | | | | | | | | | | | | Annual average | | | | | | | | | | | | | | | | | | | | Global average | | | |
|  | Winter | | | | Spring | | | | Summer | | | | Fall | | | | 2015 | | | | 2016 | | | | 2017 | | | | 2018 | | | | 2019 | | | |
| **SST (°C)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SOMLIT-pier | 10,44 | ± | 0,78 | *26* | 12,26 | ± | 1,46 | *31* | 15,89 | ± | 0,70 | *31* | 13,65 | ± | 1,43 | *31* | 13,27 | ± | 2,05 | *24* | 12,95 | ± | 2,12 | *24* | 13,5 | ± | 2,40 | *23* | 12,90 | ± | 2,56 | *24* | 13,24 | ± | 2,35 | *24* | 13,17 | ± | 2,27 | *119* |
| Astan buoy | 11.04 | ± | 0,63 | *4582* | 11,83 | ± | 1,24 | *7359* | 14.05 | ± | 2,14 | *6647* | 13,74 | ± | 1,53 | *3877* |  | - |  |  | 13,20 | ± | 2,02 | *15563* | 12,58 | ± | 1,94 | *12773* | 12,44 | ± | 2,49 | *13143* | 13,51 | ± | 2,18 | *11956* | 13,33 | ± | 2,09 | *27519* |
| SOMLIT-offshore | 10,75 | ± | 0,76 | *27* | 11,89 | ± | 1,30 | *31* | 15,34 | ± | 0,66 | *32* | 13,85 | ± | 1,27 | *31* | 13,16 | ± | 1,91 | *24* | 13,03 | ± | 1,93 | *25* | 13,29 | ± | 2,12 | *24* | 12,64 | ± | 2,26 | *24* | 13,13 | ± | 2,10 | *24* | 13,05 | ± | 2,04 | *121* |
| **SSS** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SOMLIT-pier | 35,15 | ± | 0,13 | *27* | 35,14 | ± | 0,17 | *29* | 35,27 | ± | 0,09 | *30* | 35,26 | ± | 0,11 | *31* | 35,24 | ± | 0,08 | *24* | 35,19 | ± | 0,16 | *24* | 35,32 | ± | 0,07 | *24* | 35,09 | ± | 0,18 | *21* | 35,19 | ± | 0,08 | *24* | 35,21 | ± | 0,14 | *117* |
| Astan buoy | 35,14 | ± | 0,14 | *4222* | 35,11 | ± | 0,41 | *7359* | 35,22 | ± | 0,07 | *6647* | 35,24 | ± | 0,15 | *7843* |  | - |  |  | 35,20 | ± | 0,31 | *15560* | 35,27 | ± | 0,07 | *15560* | 34,98 | ± | 0,20 | *13143* | 35,17 | ± | 0,10 | *11552* | 35,19 | ± | 0,25 | *27112* |
| SOMLIT-offshore | 35,21 | ± | 0,11 | *27* | 35,15 | ± | 0,18 | *31* | 35,26 | ± | 0,08 | *32* | 35,29 | ± | 0,08 | *30* | 35,26 | ± | 0,08 | *24* | 35,24 | ± | 0,11 | *25* | 35,32 | ± | 0,05 | *24* | 35,10 | ± | 0,18 | *24* | 35,23 | ± | 0,06 | *23* | 35,23 | ± | 0,13 | *120* |
| **DO% (%)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SOMLIT-pier | 102,9 | ± | 3,0 | *26* | 114,7 | ± | 7,1 | *29* | 112,0 | ± | 6,28 | *27* | 99,3 | ± | 2,3 | *30* | 107,9 | ± | 8,8 | *23* | 105,9 | ± | 6,8 | *24* | 107,6 | ± | 8,0 | *23* | 106,3 | ± | 9,4 | *20* | 108,2 | ± | 8,3 | *22* | 107,2 | ± | 8,2 | *112* |
| Astan buoy | 98,2 | ± | 1,6 | *3117* | 105,7 | ± | 4,1 | *4922* | 103,7 | ± | 4,52 | *5670* | 97.1 | ± | 1.0 | *4583* |  | - |  |  | 101,4 | ± | 4,5 | *15058* | 100,8 | ± | 4,9 | *10049* | 103,2 | ± | 5,2 | *10535* | 103,0 | ± | 4,9 | *6255* | 101,8 | ± | 4,7 | *21359* |
| SOMLIT-offshore | 99,9 | ± | 1,2 | *27* | 104,9 | ± | 2,6 | *31* | 103,6 | ± | 4,21 | *28* | 97,4 | ± | 1,2 | *30* | 101,7 | ± | 3,9 | *23* | 101,1 | ± | 3,5 | *24* | 102,1 | ± | 4,1 | *23* | 100,7 | ± | 3,8 | *23* | 102,0 | ± | 4,7 | *23* | 101,5 | ± | 4,0 | *116* |
| **Chl-a (µg L-1)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SOMLIT-pier | 0,6 | ± | 0,5 | *27* | 1,5 | ± | 1,1 | *31* | 1,1 | ± | 0,6 | *31* | 0,5 | ± | 0,2 | *29* | 0,9 | ± | 0,6 | *24* | 0,8 | ± | 0,5 | *24* | 0,9 | ± | 0,8 | *24* | 1,0 | ± | 1,1 | *24* | 1,1 | ± | 0,8 | *22* | 0,9 | ± | 0,8 | *118* |
| Astan buoy | 0,6 | ± | 0,2 | *4677* | 1,4 | ± | 0,8 | *6887* | 1,3 | ± | 0,3 | *6647* | 0.8 | ± | 0,3 | *7876* |  | - |  |  |  | ± | 0,7 | *15091* | 0,5\* | ± | 0,3 | *10585* | - | | | | 1,1 | ± | 0,3 | *12051* | 1,1 | ± | 0,6 | *27189* |
| SOMLIT-offshore | 0,6 | ± | 0,3 | *27* | 1,2 | ± | 0,8 | *31* | 0,9 | ± | 0,5 | *31* | 0,5 | ± | 0,1 | *29* | 0,8 | ± | 0,5 | *24* | 0,7 | ± | 0,3 | *24* | 0,9 | ± | 0,9 | *24* | 0,7 | ± | 0,5 | *24* | 1,0 | ± | 0,5 | *22* | 0,8 | ± | 0,6 | *118* |
| **pCO2 (µatm)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SOMLIT-pier | 443 | ± | 32 | *25* | 341 | ± | 42 | *29* | 389 | ± | 40 | *30* | 482 | ± | 26 | *25* | 393 | ± | 72 | *23* | 411 | ± | 61 | *24* | 415 | ± | 69 | *23* | 432 | ± | 61 | *21* | 400 | ± | 52 | *18* | 410 | ± | 64 | *109* |
| Astan buoy | 448 | ± | 19 | *5347* | 371 | ± | 27 | *7603* | 367 | ± | 41 | *6581* | 484 | ± | 21 | *5876* |  | - |  |  | 412 | ± | 41 | *10689* |  | - |  |  |  | - |  |  | 439 | ± | 54 | *13060* | 427 | ± | 51 | *23795* |
| SOMLIT-offshore | 457 | ± | 45 | *27* | 415 | ± | 52 | *27* | 437 | ± | 36 | *32* | 487 | ± | 32 | *28* | 417 | ± | 40 | *24* | 432 | ± | 37 | *25* | 438 | ± | 40 | *24* | 472 | ± | 51 | *20* | 496 | ± | 34 | *21* | 436 | ± | 39 | *119* |
| **pCO2therm (µatm)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SOMLIT-pier | 361 | ± | 12 | *26* | 391 | ± | 24 | *31* | 455 | ± | 13 | *31* | 417 | ± | 24 | *29* | 409 | ± | 35 | *24* | 403 | ± | 37 | *24* | 413 | ± | 41 | *23* | 403 | ± | 44 | *24* | 411 | ± | 42 | *22* | 408 | ± | 39 | *117* |
| Astan buoy | 385 | ± | 10 | *4582* | 399 | ± | 21 | *7359* | 439 | ± | 39 | *6647* | 432 | ± | 28 | *7876* |  | - |  |  | 423 | ± | 36 | *15563* |  | - |  |  |  | - |  |  | 429 | ± | 40 | *17879* | 425 | ± | 38 | *21047* |
| SOMLIT-offshore | 389 | ± | 13 | *27* | 409 | ± | 23 | *31* | 472 | ± | 13 | *32* | 447 | ± | 22 | *29* | 432 | ± | 34 | *24* | 430 | ± | 35 | *25* | 435 | ± | 39 | *24* | 423 | ± | 40 | *24* | 434 | ± | 39 | *22* | 431 | ± | 37 | *119* |
| **pCO2non-therm (µatm)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SOMLIT-pier | 495 | ± | 31 | *25* | 355 | ± | 57 | *29* | 343 | ± | 33 | *30* | 467 | ± | 33 | *25* | 388 | ± | 73 | *23* | 414 | ± | 77 | *24* | 409 | ± | 82 | *23* | 439 | ± | 80 | *21* | 398 | ± | 74 | *18* | 410 | ± | 78 | *109* |
| Astan buoy | 480 | ± | 19 | *3981* | 391 | ± | 44 | *7359* | 378 | ± | 28 | *6583* | 462 | ± | 41 | *5773* |  | - |  |  | 417 | ± | 47 | *10316* |  | - |  |  |  | - |  |  | 427 | ± | 63 | *17430* | 422 | ± | 56 | *27519* |
| SOMLIT-offshore | 488 | ± | 27 | *27* | 414 | ± | 40 | *31* | 392 | ± | 21 | *32* | 457 | ± | 27 | *25* | 414 | ± | 37 | *24* | 433 | ± | 49 | *25* | 434 | ± | 49 | *24* | 457 | ± | 47 | *24* | 435 | ± | 50 | *18* | 434 | ± | 48 | *115* |
| **δpCO2Therm (µatm)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SOMLIT-pier | -52 | ± | 14 | *25* | -14 | ± | 24 | *29* | 46 | ± | 11 | *30* | 16 | ± | 27 | *25* | 5 | ± | 34 | *23* | -3 | ± | 37 | *24* | 6 | ± | 43 | *23* | -7 | ± | 49 | *21* | 2 | ± | 45 | *18* | 1 | ± | 41 | *109* |
| Astan buoy | -39 | ± | 12 | *3981* | -20 | ± | 21 | *7359* | 18 | ± | 37 | *6583* | 22 | ± | 30 | *5773* |  | - |  |  | -5 | ± | 36 | *10316* |  | - |  |  |  | - |  |  | 9 | ± | 40 | *17430* | 2 | ± | 38 | *22016* |
| SOMLIT-offshore | -44 | ± | 15 | *27* | -20 | ± | 24 | *31* | 41 | ± | 13 | *32* | 19 | ± | 24 | *25* | 3 | ± | 34 | *24* | -1 | ± | 35 | *25* | 4 | ± | 40 | *24* | -8 | ± | 44 | *24* | 0 | ± | 43 | *18* | 0 | ± | 39 | *115* |
| **δpCO2Non-therm (µatm)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SOMLIT-pier | 83 | ± | 28 | *25* | -48 | ± | 56 | *29* | -67 | ± | 37 | *30* | 65 | ± | 31 | *25* | -17 | ± | 75 | *23* | 7 | ± | 76 | *24* | 2 | ± | 82 | *23* | 30 | ± | 78 | *21* | -10 | ± | 73 | *18* | 3 | ± | 77 | *109* |
| Astan buoy | 57 | ± | 17 | *3981* | -27 | ± | 44 | *7359* | -42 | ± | 30 | *6583* | 44 | ± | 40 | *5773* |  | - |  |  | -3 | ± | 46 | *10316* |  | - |  |  |  | - |  |  | 7 | ± | 63 | *17430* | 2 | ± | 56 | *22016* |
| SOMLIT-offshore | 54 | ± | 25 | *27* | -15 | ± | 39 | *31* | -40 | ± | 23 | *32* | 29 | ± | 27 | *25* | -15 | ± | 39 | *24* | 3 | ± | 49 | *25* | 4 | ± | 49 | *24* | 26 | ± | 44 | *24* | 4 | ± | 48 | *18* | 4 | ± | 47 | *115* |
| **Flux (mmol C m-2 d-1)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SOMLIT-pier | 1,9 | ± | 2,7 | *25* | -2,1 | ± | 1,8 | *29* | -0,2 | ± | 1,0 | *29* | 4,4 | ± | 4,0 | *29* | 0,8 | ± | 4,4 | *23* | 1,5 | ± | 3,6 | *24* | 1,3 | ± | 4,2 | *23* | 0,2 | ± | 2,2 | *21* | 1,0 | ± | 3,0 | *21* | 1,0 | ± | 3,6 | *112* |
| Astan buoy | 2,3 | ± | 2,2 | *3609* | -1,2 | ± | 1,8 | *6051* | -0,35 | ± | 2.0 | *6051* | 4.53 | ± | 3,7 | *5708* |  | - |  |  | 0,8 | ± | 2,6 | *10316* |  | - |  |  |  | - |  |  | 1,9 | ± | 3,9 | *10731* | 1.4 | ± | 3,4 | *21047* |
| SOMLIT-offshore | 2,0 | ± | 2,5 | *27* | -0,3 | ± | 1,0 | *31* | 0,9 | ± | 0,9 | *31* | 4,4 | ± | 4,6 | *29* | 1,4 | ± | 3,2 | *24* | 2,2 | ± | 3,1 | *25* | 2,1 | ± | 4,8 | *24* | 1,0 | ± | 1,2 | *24* | 1,8 | ± | 2,4 | *21* | 1,7 | ± | 3,2 | *118* |

**Supplementary material Table T1.** Seasonal average, annual average and total average at the SOMLIT stations calculated from 5 years of data, and at the Astan buoy calculated from the most complete seasons and years with data acquisition >60% sufficient to establish a representative average. Values in the table are given in the format of “mean ± one standard deviation and number of observations in italics”.