Table S1. Instrument performance summary for the King Air and HU-25 Falcon during ACTIVATE. OK = functioned well during the entire flight; "So So" = some loss of data quantity/quality; N/A = no usable data. Deployments are separated by blank rows: Deployment 1 (RF1-RF22), Deployment 2 (RF23-RF40), Deployment 3 (RF41-RF61), Deployment 4 (RF62-RF93), Deployment 5 (RF94-RF148), Deployment 6 (RF149-RF179).

|  |  | King Air |  |  | Falcon |  |  |  |  |  |  |  |  |  |  |  |  |
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| RF | Date | AVAPS | $\begin{gathered} \text { HSRL- } \\ 2 \end{gathered}$ | RSP | DLH | Trace Gas | TAMMS | LARGE CDP/ CAS | $\begin{aligned} & \text { FCDP/ } \\ & \text { 2DS } \end{aligned}$ | LARGE <br> Microphysics | LARGE <br> Optical | CCN | AMS | PILS | AC3 <br> Cloud <br> Water | CVI | State <br> Variables |
| 1 | 2/14/2020 | OK | OK | OK | OK | So So | OK | So So | OK | OK | OK | OK | OK | OK | OK | N/A | OK |
| 2 | 2/15/2020 | OK | OK | OK | OK | So So | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 3 | 2/17/2020 | OK | OK | OK | OK | So So | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 4 | 2/21/2020 | N/A | N/A | N/A | OK | So So | OK | So So | OK | OK | OK | OK | OK | OK | N/A | OK | OK |
| 5 | 2/22/2020 | N/A | N/A | N/A | OK | So So | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 6 | 2/22/2020 | N/A | N/A | N/A | OK | So So | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 7 | 2/23/2020 | N/A | N/A | N/A | OK | So So | OK | So So | OK | OK | OK | OK | OK | OK | N/A | OK | OK |
| 8 | 2/23/2020 | N/A | N/A | N/A | OK | So So | OK | So So | OK | OK | OK | OK | OK | OK | N/A | OK | OK |
| 9 | 2/27/2020 | OK | OK | OK | OK | So So | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 10 | 2/28/2020 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 11 | 2/28/2020 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 12 | 2/29/2020 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 13 | 3/1/2020 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 14 | 3/1/2020 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 15 | 3/2/2020 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 16 | 3/6/2020 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 17 | 3/8/2020 | OK | OK | N/A | OK | OK | OK | So So | So So | OK | OK | OK | OK | OK | OK | OK | OK |
| 18 | 3/8/2020 | OK | OK | N/A | OK | OK | OK | So So | So So | OK | OK | OK | OK | OK | OK | OK | OK |
| 19 | 3/9/2020 | OK | OK | OK | OK | OK | OK | So So | So So | OK | OK | OK | OK | OK | OK | OK | OK |
| 20 | 3/11/2020 | OK | OK | OK | OK | OK | OK | So So | So So | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK | OK |
| 21 | 3/12/2020 | OK | OK | OK | OK | OK | OK | So So | So So | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK | OK |
| 22 | 3/12/2020 | OK | OK | OK | OK | OK | OK | So So | So So | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK | OK |


| 23 | 8/13/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | N/A | OK | OK | OK |
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| 24 | 8/17/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 25 | 8/20/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 26 | 8/21/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK |
| 27 | 8/25/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK |
| 28 | 8/26/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK |
| 29 | 8/28/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK |
| 30 | 9/2/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 31 | 9/3/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 32 | 9/10/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 33 | 9/11/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 34 | 9/15/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | N/A | OK | OK | OK | OK | OK |
| 35 | 9/16/2020 | N/A | N/A | OK | OK | OK | OK | OK | OK | OK | OK | N/A | OK | OK | OK | OK | OK |
| 36 | 9/21/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | N/A | OK | OK | OK | OK | OK |
| 37 | 9/22/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK | OK | OK |
| 38 | 9/23/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK | OK | OK |
| 39 | 9/29/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK | OK | OK |
| 40 | 9/30/2020 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK | OK | OK |
| 41 | 1/27/2021 | N/A | N/A | N/A | OK | OK | OK | So So | OK | So So | OK | OK | N/A | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK |
| 42 | 1/29/2021 | OK | OK | OK | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 43 | 1/29/2021 | N/A | N/A | N/A | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 44 | 2/3/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 45 | 2/10/2021 | OK | OK | OK | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 46 | 2/20/2021 | OK | OK | OK | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 47 | 2/21/2021 | OK | OK | OK | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 48 | 3/4/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |


| 49 | 3/5/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
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| 51 | 3/8/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
| 52 | 3/9/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
| 53 | 3/12/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
| 54 | 3/12/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
| 55 | 3/20/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
| 56 | 3/23/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
| 57 | 3/29/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
| 58 | 3/30/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
| 59 | 3/30/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
| 60 | 4/2/2021 | OK | OK | OK | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
| 61 | 4/2/2021 | OK | OK | N/A | OK | N/A | OK | So So | OK | OK | OK | OK | N/A | N/A | OK | N/A | OK |
| 62 | 5/13/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | N/A | OK |
| 63 | 5/14/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | N/A | OK | OK |
| 64 | 5/14/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | N/A | OK | OK |
| 65 | 5/15/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | N/A | OK | OK |
| 66 | 5/18/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 67 | 5/19/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 68 | 5/19/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 69 | 5/20/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 70 | 5/21/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 71 | 5/21/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 72 | 5/25/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 73 | 5/26/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 74 | 5/26/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 75 | 6/1/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 76 | 6/2/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 77 | 6/2/2021 | OK | OK | OK | OK | OK | OK | So So | OK | So So | OK | OK | OK | OK | OK | OK | OK |
| 78 | 6/5/2021 | OK | OK | OK | OK | OK | OK | So So | OK | So So | OK | OK | OK | OK | OK | OK | OK |
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| 80 | 6/7/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
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| 81 | 6/8/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 82 | 6/8/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 83 | 6/15/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 84 | 6/16/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 85 | 6/17/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 86 | 6/22/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 87 | 6/24/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | So So | OK | OK | OK | OK | OK | OK |
| 88 | 6/26/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | So So | OK | OK | OK | OK | OK | OK |
| 89 | 6/26/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | So So | OK | OK | OK | OK | OK | OK |
| 90 | 6/28/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | So So | OK | OK | OK | OK | OK | OK |
| 91 | 6/29/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 92 | 6/30/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 93 | 6/30/2021 | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 94 | 11/30/2021 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | N/A | OK | OK | OK | OK | OK |
| 95 | 12/1/2021 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | N/A | OK | OK | OK | OK | OK |
| 96 | 12/7/2021 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 97 | 12/9/2021 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 98 | 12/9/2021 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 99 | 12/10/2021 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
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| 102 | 1/12/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 103 | 1/12/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
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| 107 | 1/19/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 108 | 1/19/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
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| 112 | 1/26/2022 | OK | OK | OK | ок | ок | ок | ок | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 113 | 1/27/2022 | OK | OK | OK | ок | ок | ок | ок | ок | OK | ок | ок | OK | OK | ок | OK | ок |
| 114 | 1/27/2022 | OK | OK | N/A | ок | ок | OK | ок | OK | OK | ок | ок | OK | OK | ок | OK | OK |
| 115 | 2/1/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | ок | OK | OK |
| 116 | 2/2/2022 | OK | OK | OK | ок | ок | ок | ок | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 117 | 2/3/2022 | OK | OK | OK | ок | ок | ок | ок | ок | OK | ок | ок | OK | OK | ок | OK | ок |
| 118 | 2/3/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | Ок | Ок | N/A | OK | ок | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK |
| 119 | 2/5/2022 | OK | OK | OK | ок | ок | ок | ок | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 120 | 2/15/2022 | OK | OK | OK | OK | ок | OK | OK | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 121 | 2/15/2022 | OK | OK | OK | ок | ок | OK | ок | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 122 | 2/16/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | ок | OK | OK |
| 123 | 2/16/2022 | OK | OK | OK | ок | ок | ок | ок | ок | OK | ок | ок | OK | OK | ок | OK | ок |
| 124 | 2/19/2022 | OK | OK | OK | OK | ок | OK | OK | OK | OK | ок | OK | OK | OK | ок | OK | ок |
| 125 | 2/19/2022 | OK | OK | OK | ок | ок | ок | ок | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 126 | 2/22/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | Ок | OK | OK |
| 127 | 2/22/2022 | OK | OK | OK | ок | ок | ок | ок | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 128 | 2/26/2022 | OK | OK | OK | ок | ок | OK | ок | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 129 | 2/26/2022 | N/A | N/A | OK | OK | OK | OK | OK | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 130 | 3/2/2022 | OK | OK | OK | OK | ок | OK | OK | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 131 | 3/3/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 132 | 3/3/2022 | OK | OK | OK | ок | ок | ок | ок | OK | OK | ок | ок | OK | OK | ок | OK | ок |
| 133 | 3/4/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | ок | OK | OK |
| 134 | 3/4/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | ок | OK | OK |
| 135 | 3/7/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK |
| 136 | 3/7/2022 | N/A | N/A | N/A | OK | OK | OK | OK | OK | OK | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK |
| 137 | 3/13/2022 | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | Ок | OK | OK |
| 138 | 3/13/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK | OK | OK |


| 139 | 3/14/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
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| 140 | 3/14/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 141 | 3/18/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 142 | 3/22/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 143 | 3/22/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK | OK |
| 144 | 3/26/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 145 | 3/26/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 146 | 3/28/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 147 | 3/29/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
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| 149 | 5/3/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 150 | 5/5/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 151 | 5/5/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 152 | 5/10/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 153 | 5/16/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 154 | 5/16/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 155 | 5/17/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 156 | 5/18/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 157 | 5/18/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK | OK |
| 158 | 5/20/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 159 | 5/21/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 160 | 5/21/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | $\begin{aligned} & \text { So } \\ & \text { So } \end{aligned}$ | OK | OK | OK | OK |
| 161 | 5/31/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 162 | 6/2/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 163 | 6/2/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 164 | 6/3/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 165 | 6/5/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 166 | 6/7/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |


| 167 | 6/7/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 168 | 6/8/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 169 | 6/8/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK |
| 170 | 6/10/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | So So | OK | OK | OK | OK | OK | OK |
| 171 | 6/10/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 172 | 6/11/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 173 | 6/11/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 174 | 6/13/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 175 | 6/13/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 176 | 6/14/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 177 | 6/16/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 178 | 6/17/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |
| 179 | 6/18/2022 | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK | OK |



Figure S1: Closure analysis for particle number concentration measurements derived from an ultrafine CPC, SMPS, and LAS. (a-b) Timeseries data are shown for Research Flight 14 (1 March 2020), (c) an average size distribution during a MinAlt leg at approximately UTC 21:17, and (d) a scatterplot of the integrated number concentration derived from LAS+SMPS instruments against number concentration directly measured by a CPC.

