Electronic Supplement for the Article: Observation of Cirrus Clouds with GLORIA during the WISE Campaign: Detection Methods and Cirrus Characterization

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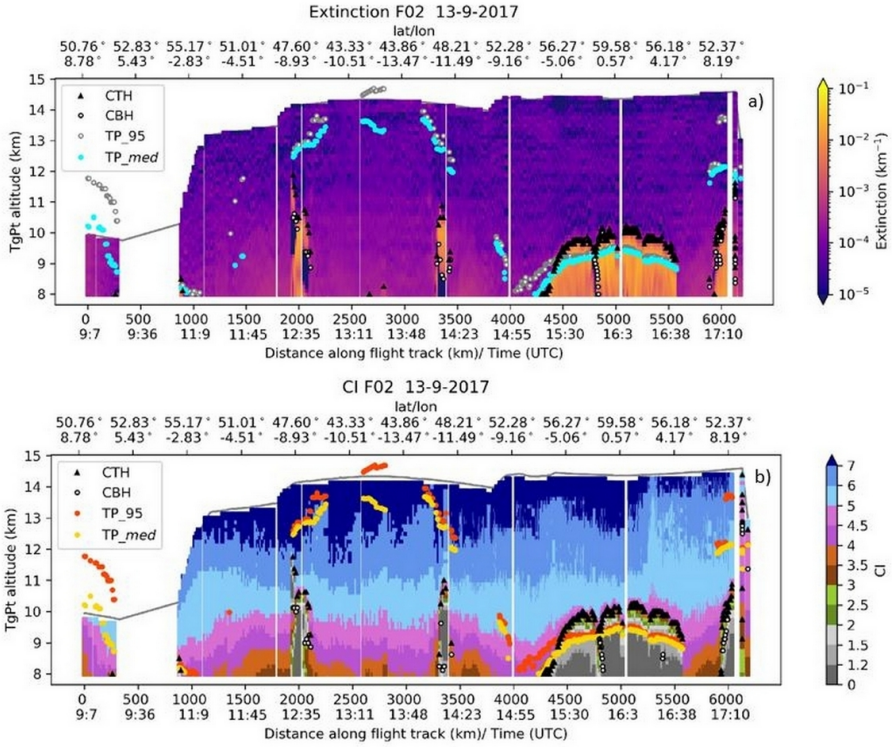

Figure S1. Cross-sections of extinction (a) and cloud index (b) for flight 2 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

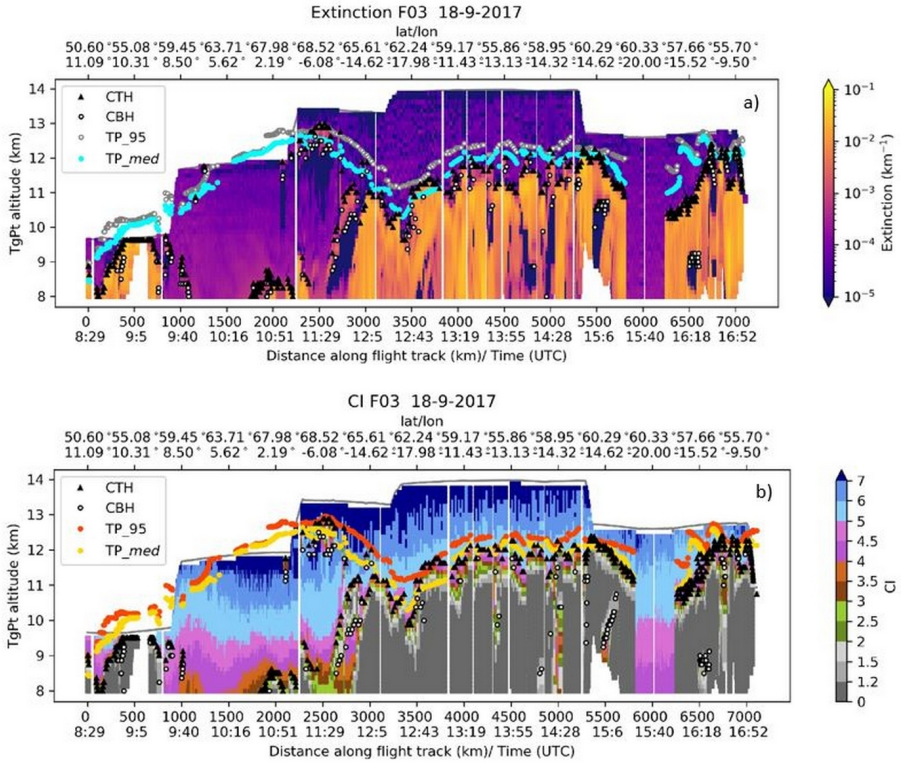

Figure S2. Cross-sections of extinction (a) and cloud index (b) for flight 3 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

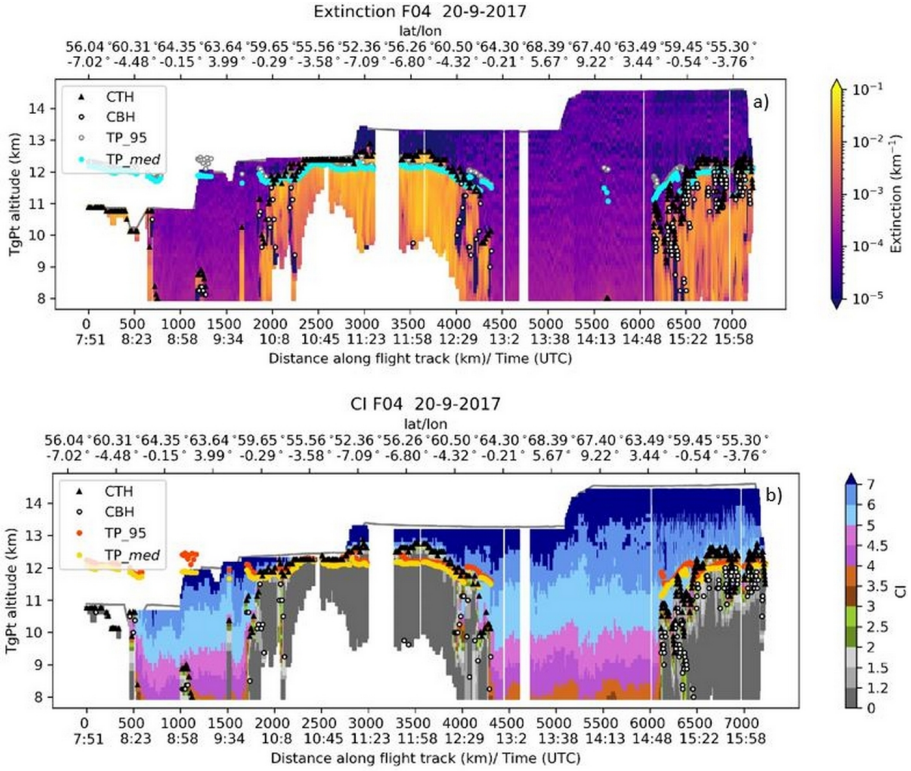

Figure S3. Cross-sections of extinction (a) and cloud index (b) for flight 4 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

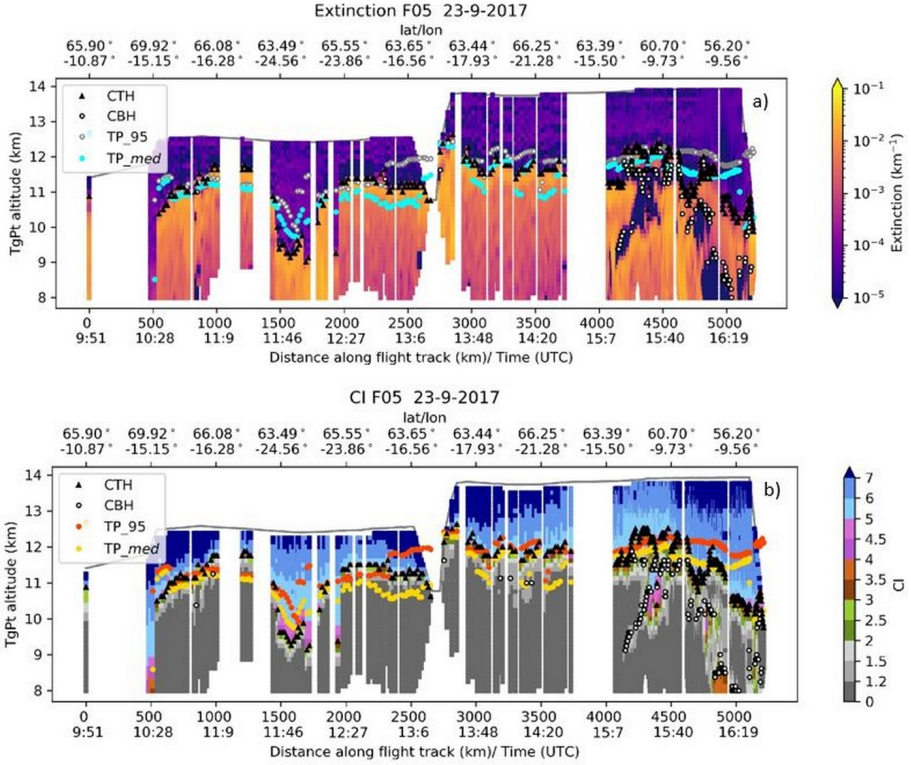

Figure S4. Cross-sections of extinction (a) and cloud index (b) for flight 5 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

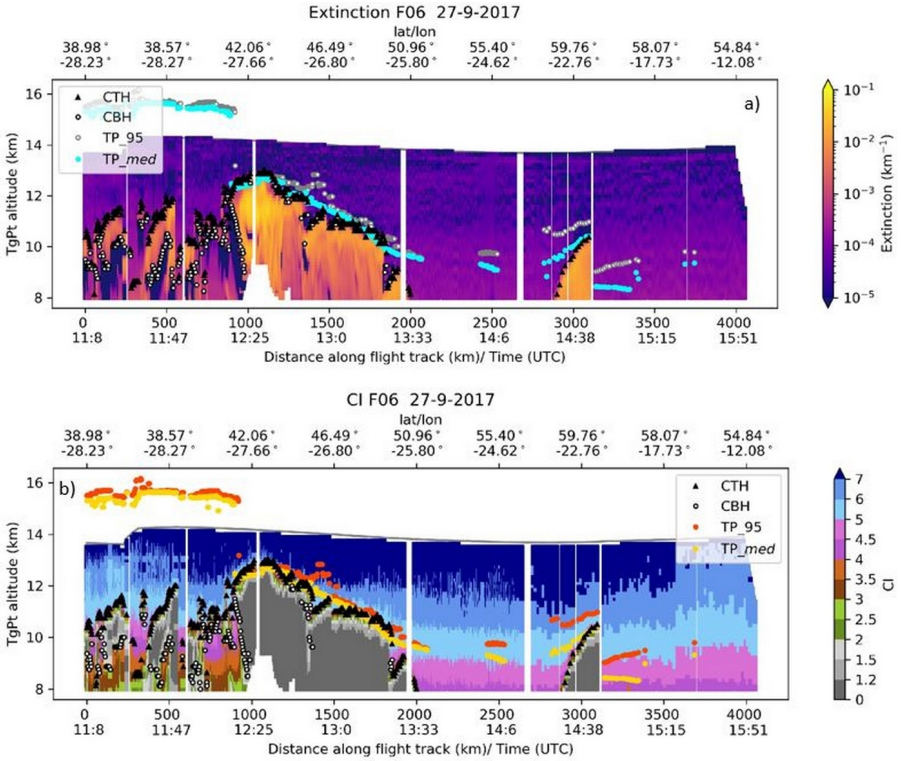

Figure S5. Cross-sections of extinction (a) and cloud index (b) for flight 6 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

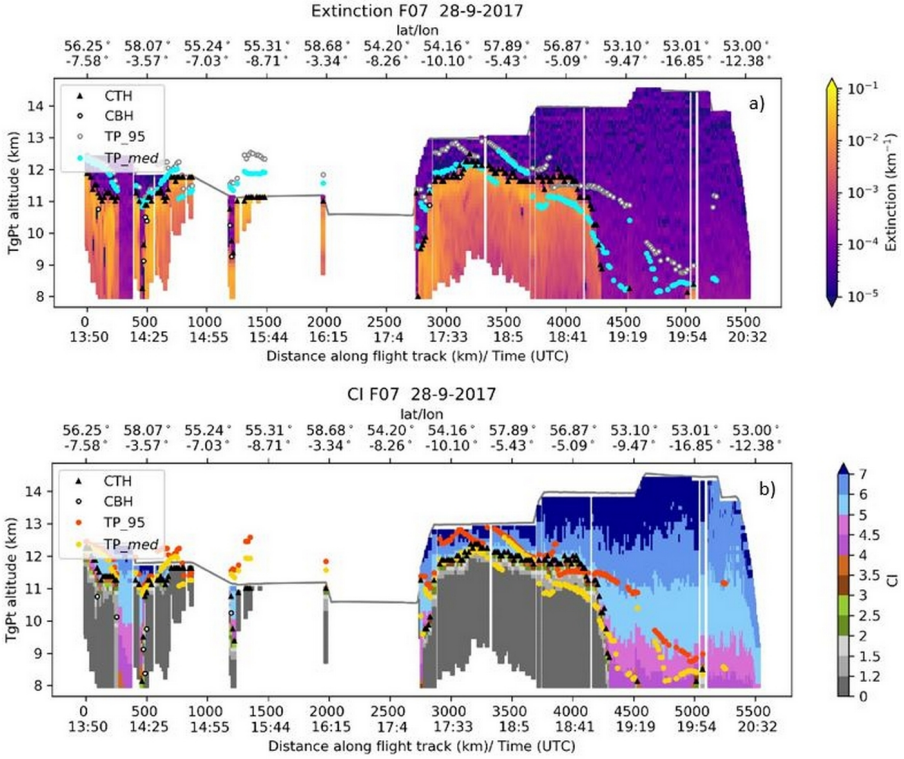

Figure S6. Cross-sections of extinction (a) and cloud index (b) for flight 7 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

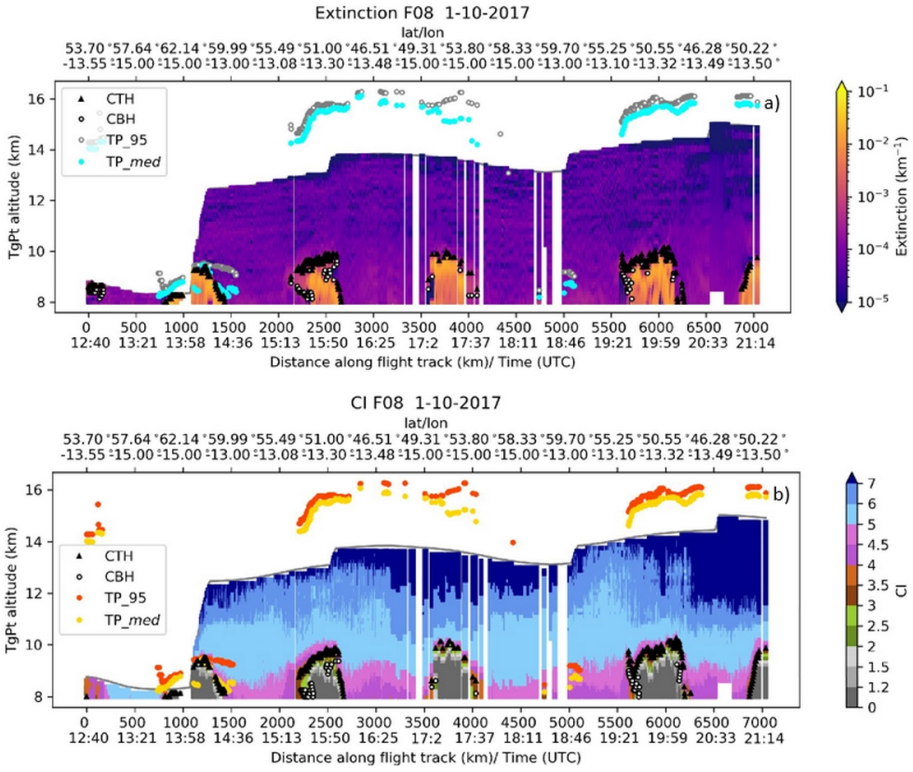

Figure S7. Cross-sections of extinction (a) and cloud index (b) for flight 8 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

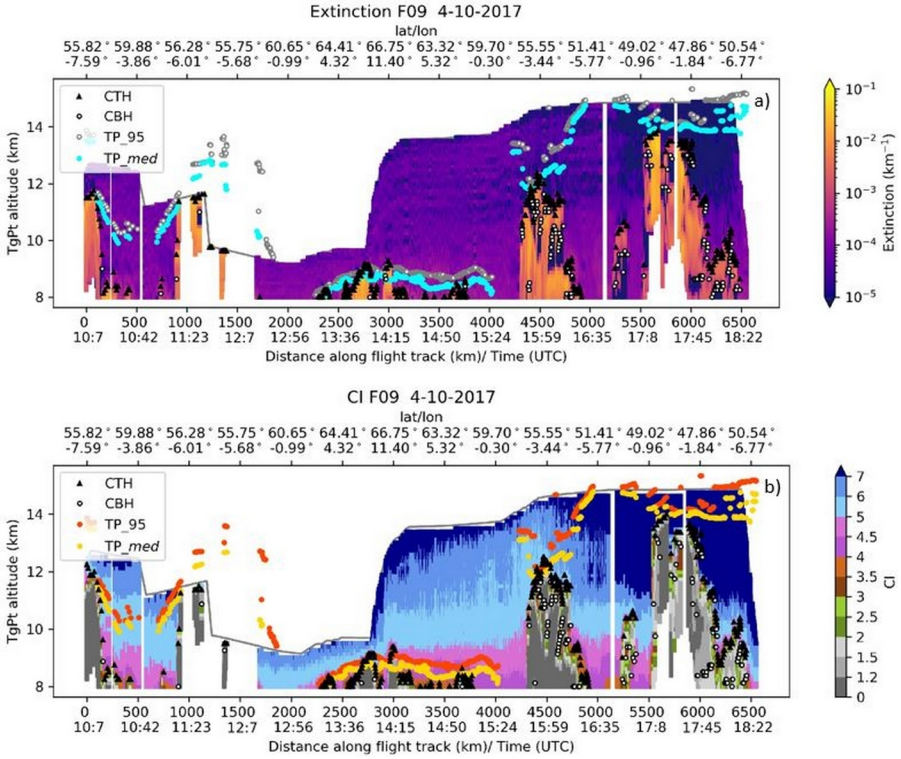

Figure S8. Cross-sections of extinction (a) and cloud index (b) for flight 9 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

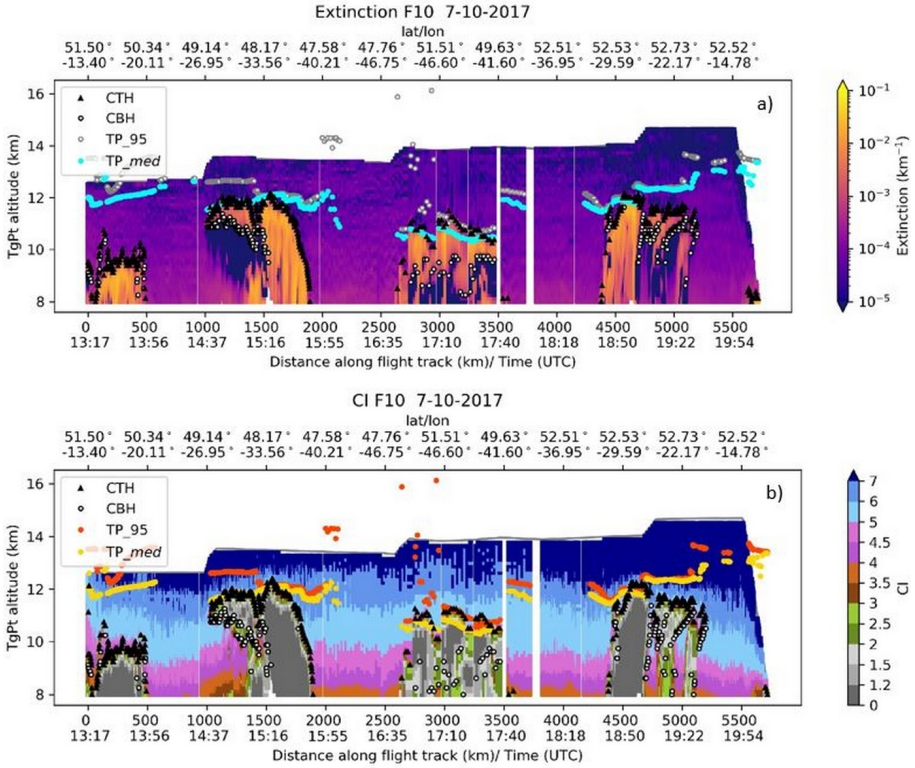

Figure S9. Cross-sections of extinction (a) and cloud index (b) for flight 10 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

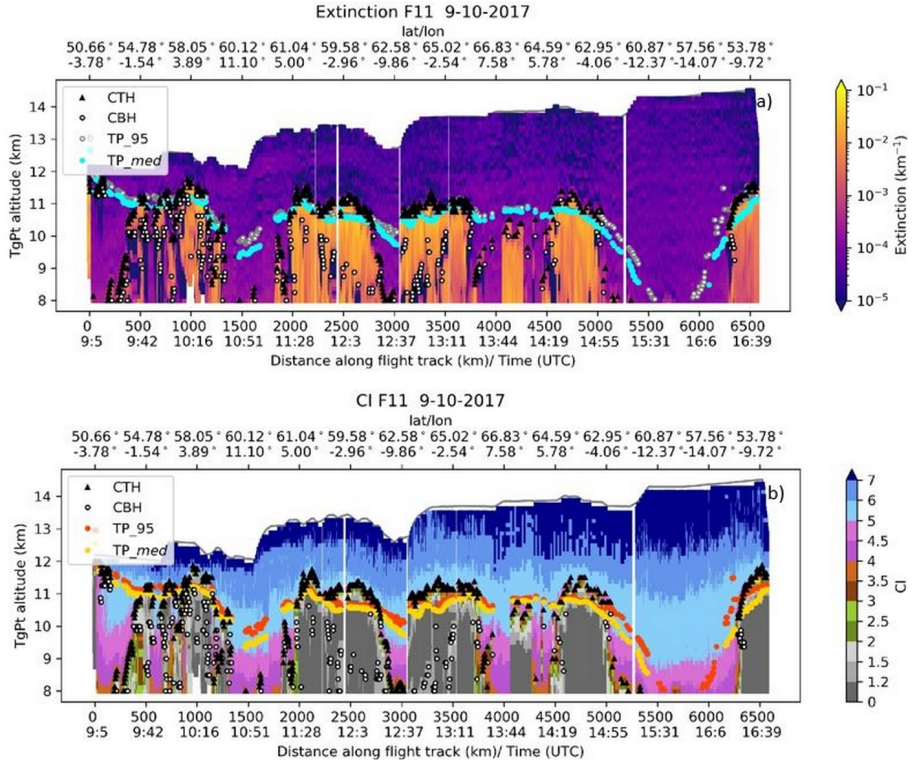

Figure S10. Cross-sections of extinction (a) and cloud index (b) for flight 11 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

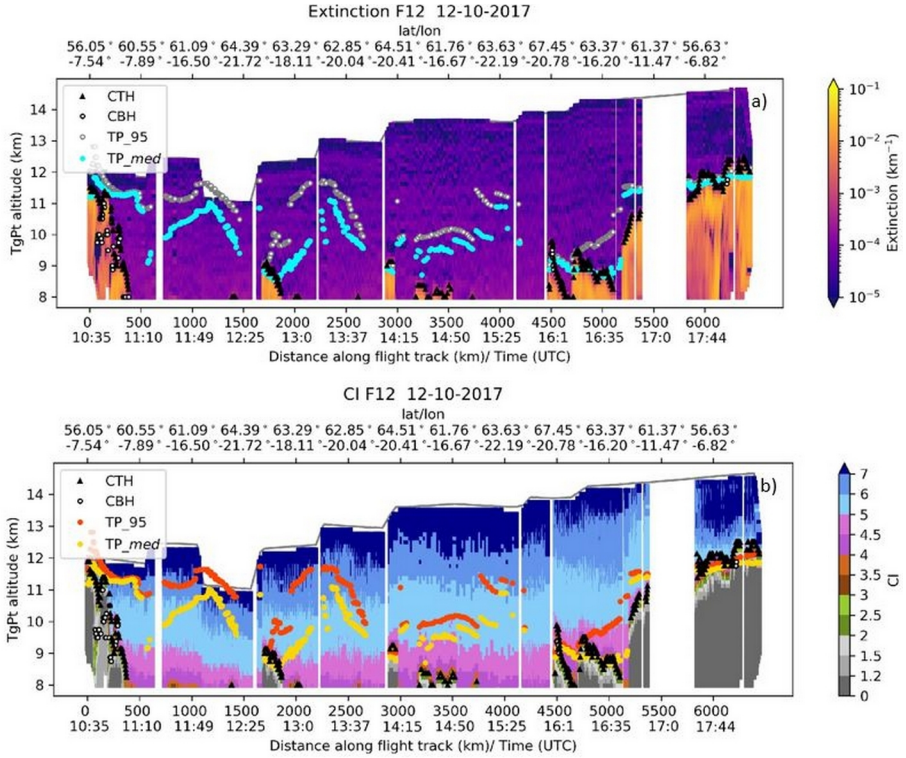

Figure S11. Cross-sections of extinction (a) and cloud index (b) for flight 12 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

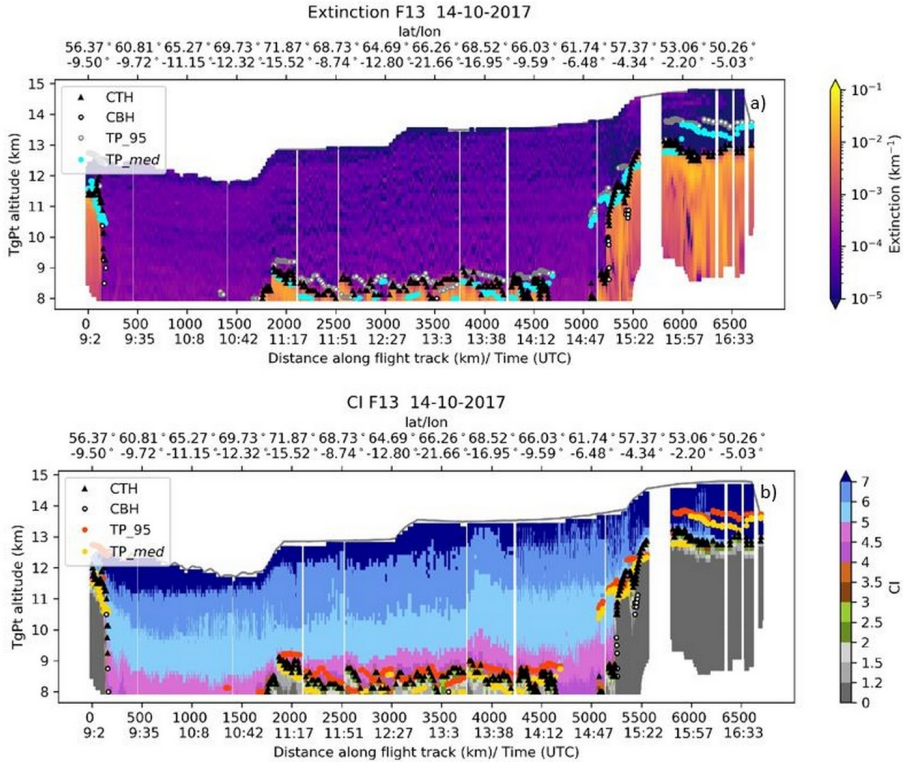

Figure S12. Cross-sections of extinction (a) and cloud index (b) for flight 13 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

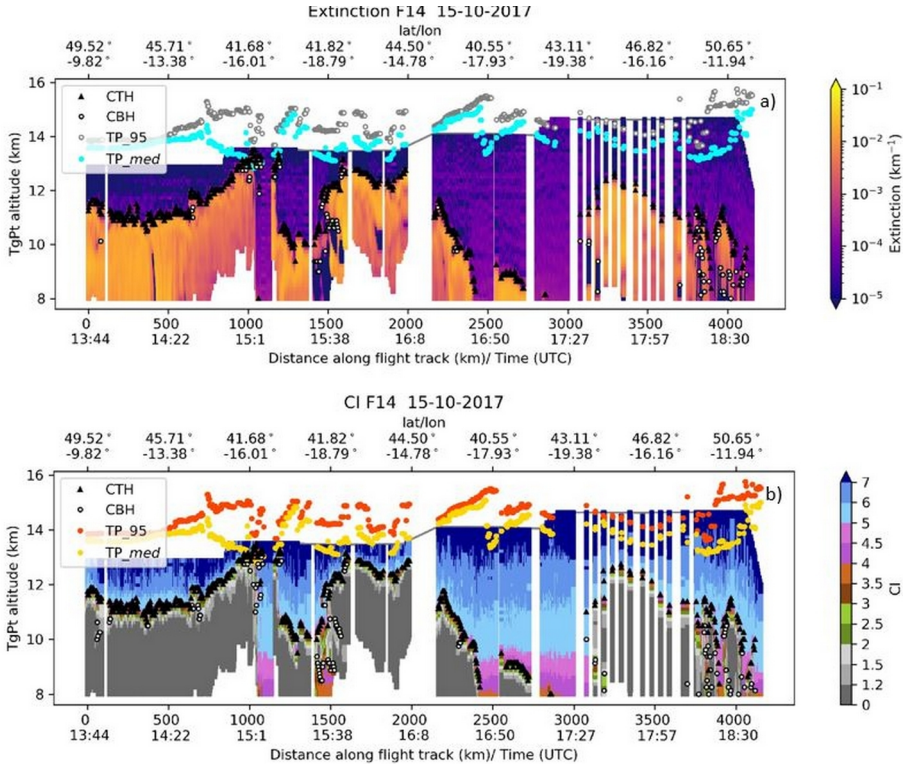

Figure S13. Cross-sections of extinction (a) and cloud index (b) for flight 14 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

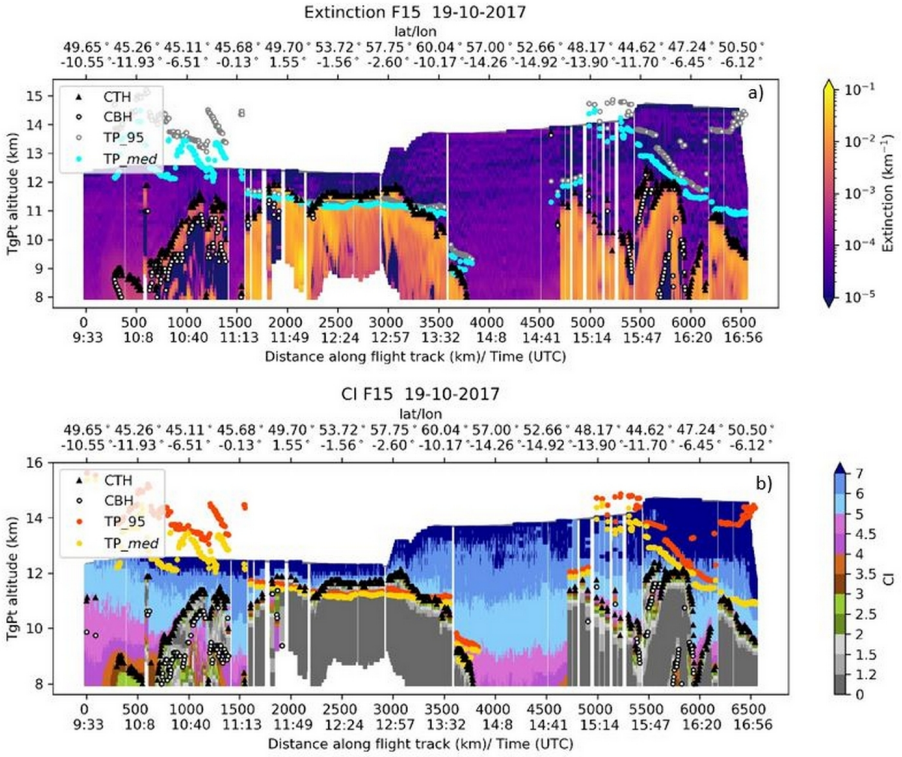

Figure S14. Cross-sections of extinction (a) and cloud index (b) for flight 15 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).

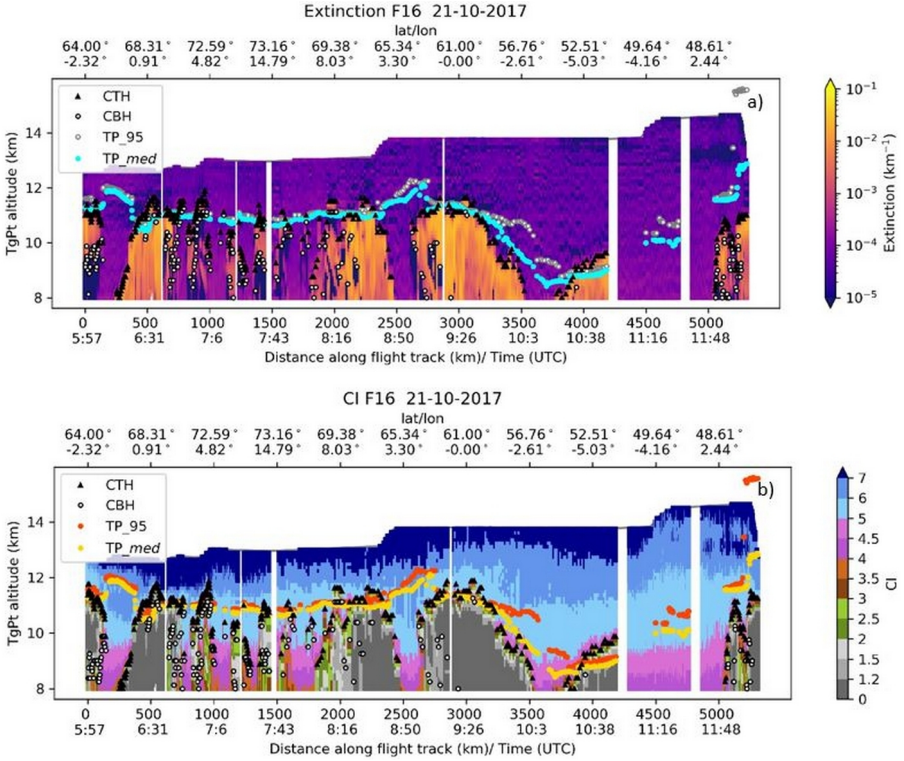

Figure S15. Cross-sections of extinction (a) and cloud index (b) for flight 16 of the WISE campaign. The results are restricted to levels below flight path. (a) Color code for extinction in km^{-1}. Orange-pink colors indicate the presence of clouds; (b) color code for CI. Depending on the altitude, CI values below 2 to 5 (colors from grey to pink) indicate the presence of clouds. Median tropopause (TP_{med}) and the percentile 95 of the tropopause (TP_{95}) are represented with orange and yellow circles, respectively. Cloud top height (CTH) and cloud bottom height (CBH) are represented with a black triangle and with a white circle, respectively. The altitude of the tangent points (TgPt) is the y axis. The white areas in both cross-sections correspond to a first filtering of optically thicker regions (CI < 2).