

*Shading indicates activities that are no longer active*

## **Ib. NDACC Long-Term Measurement Activities**

**(Locations for each instrument type. See Section Ia for details.)**

### **Dobson Spectrophotometers/Brewer Spectrometers**

Sodankylä, Finland (67.37°N, 26.65°E)  
Søndre Strømfjord, Greenland (66.99°N, 50.95°W)  
DeBilt, The Netherlands (52.10°N, 5.18°E)  
Valentia, Ireland (51.94°N, 10.25°W)  
Uccle, Belgium (50.8°N, 4.35°E)  
Hohenpeissenberg, Germany (47.80°N, 11.02°E)  
Arosa, Switzerland (46.78°N, 9.68°E)  
Observatoire de Bordeaux, France (44.83°N, 0.52°W)  
Observatoire Haute Provence, France (43.94°N, 5.71°E)  
Observatoire Midi-Pyrénées / Lannemezan, France (43.12°N, 0.38°E)  
Boulder, CO, USA (39.99°N, 105.26°W)  
Wallops Island, VA, USA (37.94°N, 75.46°W)  
Izaña (Tenerife), Spain (28.30°N, 16.48°W)  
Mauna Loa, HI, USA (19.54°N, 155.58°W)  
Paramaribo, Surinam (5.75°N, 55.2°W)  
Cape Matatula, American Samoa (14.25°S, 170.56°W)  
Lauder, New Zealand (45.04°S, 169.68°E)  
Arrival Heights, Antarctica (77.83°S, 166.67°E)  
South Pole Station, Antarctica (90.00°S)

### **FTIR**

Eureka, Canada (80.05°N, 86.42°W)  
Ny Ålesund, Spitsbergen (78.92°N, 11.93°E)  
Thule, Greenland (76.53°N, 68.74°W)  
Kiruna, Sweden (67.84°N, 20.41°E)  
Harestua, Norway (60.2°, 10.8°E)  
St. Petersburg, Russia (59.9°N, 29.8°E)  
Bremen, Germany (53.1°N, 8.8°E)  
Zugspitze, Germany (47.42°N, 10.98°E)  
Jungfraujoch, Switzerland (46.55°N, 7.98°E)  
Moshiri, Japan (44.4°N, 142.3°E)  
Toronto, Canada (43.66°N, 79.40°W)  
Rikubetsu, Japan (43.46°N, 143.77°E)  
Kitt Peak, AZ, USA (31.9°N, 111.6°W)  
Izaña (Tenerife), Spain (28.30°N, 16.48°W)  
Mauna Loa, HI, USA (19.54°N, 155.58°W)  
Altzomoni, Mexico (19.12°N, 98.66°W)  
Paramaribo, Surinam (5.75°N, 55.2°W)  
Reunion Island, St. Denis, France (20.9°S, 55.5°E)  
Reunion Island, Maito, France (21.1°S, 55.4°E)  
Wollongong, Australia (34.41°S, 150.88°E)  
Lauder, New Zealand (45.04°S, 169.68°E)

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Arrival Heights, Antarctica (77.83°S, 166.67°E)

**Lidar (Aerosol)**

Eureka, Canada (80.05°N, 86.42°W)  
Ny Ålesund, Spitsbergen (78.92°N, 11.93°E)  
Thule, Greenland (76.53°N, 68.74°W)  
Garmisch, Germany (47.48°N, 11.06°E)  
Payerne, Switzerland (46.82°N, 6.95°E)  
Observatoire Haute Provence, France (43.94°N, 5.71°E)  
Toronto, Canada (43.66°N, 79.40°W)  
Boulder, CO, USA (39.99°N, 105.26°W)  
Table Mountain, CA, USA (34.4°N, 117.7°W)  
Mauna Loa, HI, USA (19.54°N, 155.58°W)  
Reunion Island, St. Denis, France (20.9°S, 55.5°E)  
Reunion Island, Maito, France (21.1°S, 55.4°E)  
Lauder, New Zealand (45.04°S, 169.68°E)  
Dumont d'Urville, Antarctica (66.67°S, 140.01°E)  
Dôme C/ Concordia, Antarctica (France) (75.10°S, 123.35°E)  
McMurdo Station, Antarctica (77.85°S, 166.63°E)

**Lidar (Ozone)**

Eureka, Canada (80.05°N, 86.42°W)  
Ny Ålesund, Spitsbergen (78.92°N, 11.93°E)  
Andøya, Norway (69.28°N, 16.01°E)  
Hohenpeissenberg, Germany (47.80°N, 11.02°E)  
Observatoire Haute Provence, France (43.94°N, 5.71°E)  
Toronto, Canada (43.66°N, 79.40°W)  
Tsukuba, Japan (36.05°N, 140.13°E)  
Table Mountain, CA, USA (34.4°N, 117.7°W)  
Mauna Loa, HI, USA (19.54°N, 155.58°W)  
Reunion Island, St. Denis, France (20.9°S, 55.5°E)  
Reunion Island, Maito, France (21.1°S, 55.4°E)  
Lauder, New Zealand (45.04°S, 169.68°E)  
Rio Gallegos, Argentina (51.60°S, 69.32°W)  
Dumont d'Urville, Antarctica (66.67°S, 140.01°E)

**Lidar (Temperature)**

Eureka, Canada (80.05°N, 86.42°W)  
Ny Ålesund, Spitsbergen (78.92°N, 11.93°E)  
Thule, Greenland (76.53°N, 68.74°W)  
Andøya, Norway (69.28°N, 16.01°E)  
Søndre Strømfjord, Greenland (66.99°N, 50.95°W)  
Hohenpeissenberg, Germany (47.80°N, 11.02°E)  
Observatoire Haute Provence, France (43.94°N, 5.71°E)  
Toronto, Canada (43.66°N, 79.40°W)  
London, Ontario, Canada (43.1°N, 81.34°W)

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Potenza, Italy (40.63°N, 15.80°E)  
Table Mountain, CA, USA (34.4°N, 117.7°W)  
Mauna Loa, HI, USA (19.54°N, 155.58°W)  
Reunion Island, St. Denis, France (20.9°S, 55.5°E)  
Reunion Island, Maito, France (21.1°S, 55.4°E)

**Lidar (Trop. Ozone)**

Observatoire Haute Provence, France (43.94°N, 5.71°E)  
Huntsville, AL, USA (34.73°N, 86.64°W)  
Table Mountain, CA, USA (34.4°N, 117.7°W)  
Reunion Island, Maito, France (21.1°S, 55.4°E)

**Lidar (Water Vapor)**

Payerne, Switzerland (46.82°N, 6.95°E)  
Observatoire Haute Provence, France (43.94°N, 5.71°E)  
London, Ontario, Canada (43.1°N, 81.34°W)  
Rome – Tor Vergata, Italy (41.84°N, 12.65°E)  
Potenza, Italy (40.63°N, 15.80°E)  
Table Mountain, CA, USA (34.4°N, 117.7°W)  
Mauna Loa, HI, USA (19.54°N, 155.58°W)  
Reunion Island, Maito, France (21.1°S, 55.4°E)

**Microwave (ClO)**

Ny Ålesund, Spitsbergen (78.92°N, 11.93°E)  
Mauna Kea, HI, USA (19.83°N, 155.48°W)  
Mauna Loa, HI, USA (19.54°N, 155.58°W)  
Scott Base, Antarctica (77.85°S, 166.78°E)

**Microwave (HNO<sub>3</sub>)**

Thule, Greenland (76.53°N, 68.74°W)

**Microwave (Ozone)**

Ny Ålesund, Spitsbergen (78.92°N, 11.93°E)  
Bern, Switzerland (46.95°N, 7.45°E)  
Payerne, Switzerland (46.82°N, 6.95°E)  
Observatoire de Bordeaux, France (44.83°N, 0.52°W)  
Rikubetsu, Japan (43.46°N, 143.77°E)  
Table Mountain, CA, USA (34.4°N, 117.7°W)  
Mauna Loa, HI, USA (19.54°N, 155.58°W)  
Lauder, New Zealand (45.04°S, 169.68°E)

**Microwave (Water Vapor)**

Onsala, Sweden (57.4°N, 11.93°E)  
Bern, Switzerland (46.95°N, 7.45°E)  
Zimmerwald, Switzerland (46.88°N, 7.47°E)  
Seoul, South Korea (37.58°N, 127.00°E)

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Table Mountain, CA, USA (34.4°N, 117.7°W)  
Mauna Loa, HI, USA (19.54°N, 155.58°W)  
Lauder, New Zealand (45.04°S, 169.68°E)

### **Sondes (Aerosol)**

Alert, Canada (82.50°N, 62.33°W)  
Heiss Island, Russia (80.6°N, 58.1°E)  
Ny Ålesund, Spitsbergen (78.92°N, 11.93°E)  
Thule, Greenland (76.53°N, 68.74°W)  
Dikson Island, Russia (73.50°N, 80.23°E)  
Scoresbysund, Greenland (70.48°N, 21.97°W)  
Kiruna, Sweden (67.84°N, 20.41°E)  
Sodankylä, Finland (67.37°N, 26.65°E)  
Yakutsk, Russia (62.0°N, 129.7°E)  
Mineapolis, MN, USA (45.14°N, 93.21°W)  
Laramie, WY, USA (41.32°N, 105.67°W)  
Natal, Brazil (5.83°S, 35.20°W)  
Mildura, Australia (34.19°S, 142.16°E)  
Lauder, New Zealand (45.04°S, 169.68°E)  
McMurdo Station, Antarctica (77.85°S, 166.63°E)  
South Pole Station, Antarctica (90.00°S)

### **Sondes (Ozone)**

Alert, Canada (82.50°N, 62.33°W)  
Eureka, Canada (80.05°N, 86.42°W)  
Ny Ålesund, Spitsbergen (78.92°N, 11.93°E)  
Thule, Greenland (76.53°N, 68.74°W)  
Summit, Greenland (72.34°N, 38.29°W)  
Scoresbysund, Greenland (70.48°N, 21.97°W)  
Sodankylä, Finland (67.37°N, 26.65°E)  
Salekhard, Russia (66.5°N, 66.7°E)  
Yakutsk, Russia (62.0°N, 129.7°E)  
Legionowo, Poland (52.40°N, 20.97°E)  
Aberystwyth, UK (52.4°N, 4.1°W)  
Lindenberg, Germany (52.21°N, 14.12°E)  
DeBilt, The Netherlands (52.10°N, 5.18°E)  
Uccle, Belgium (50.8°N, 4.35°E)  
Praha, Czech Republic (50.01°N, 14.45°E)  
Hohenpeissenberg, Germany (47.80°N, 11.02°E)  
Payerne, Switzerland (46.82°N, 6.95°E)  
Observatoire Haute Provence, France (43.94°N, 5.71°E)  
Boulder, CO, USA (39.99°N, 105.26°W)  
Wallops Island, VA, USA (37.94°N, 75.46°W)  
Izaña (Tenerife), Spain (28.30°N, 16.48°W)  
Hilo, HI, USA (19.72°N, 155.07°W)  
Paramaribo, Surinam (5.75°N, 55.2°W)

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Natal, Brazil (5.83°S, 35.20°W)  
Cape Matatula, American Samoa (14.25°S, 170.56°W)  
Reunion Island, St. Denis, France (20.9°S, 55.5°E)  
Lauder, New Zealand (45.04°S, 169.68°E)  
Dumont d'Urville, Antarctica (66.67°S, 140.01°E)  
Neumayer Station, Antarctica (70.62°S, 8.37°E)  
McMurdo Station, Antarctica (77.85°S, 166.63°E)  
Belgrano II Station, Antarctica (77.87°S, 34.62°W)  
South Pole Station, Antarctica (90.00°S)

### **Sondes (Water Vapor)**

Ny Ålesund, Spitsbergen (78.92°N, 11.93°E)  
Sodankylä, Finland (67.37°N, 26.65°E)  
Lindenberg, Germany (52.21°N, 14.12°E)  
Boulder, CO, USA (39.99°N, 105.26°W)  
Hilo, HI, USA (19.72°N, 155.07°W)  
San Jose, Costa Rica (9.59°N, 84.12°W)  
Lauder, New Zealand (45.04°S, 169.68°E)

### **Spectral UV**

Summit, Greenland (72.58°N, 38.45°W)  
Barrow, AK, USA (71.32°N, 156.68°W)  
Villeneuve d'Ascq, France (50.61°N, 3.14°E)  
Groß-Enzersdorf, Austria (48.20°N, 16.56°E)  
Garmisch, Germany (47.48°N, 11.06°E) / Zugspitze, Germany (47.42°N, 10.98°E)  
Hoher Sonnblick, Austria (47.05°N, 12.95°E)  
Briançon, France (44.90°N, 6.65°E)  
Observatoire Haute Provence, France (43.94°N, 5.71°E)  
Boulder, CO, USA (39.99°N, 105.26°W)  
Mauna Loa, HI, USA (19.54°N, 155.58°W)  
Reunion Island, France (20.9°S, 55.5°E)  
Alice Springs, Australia (23.80°S, 133.87°E)  
Lauder, New Zealand (45.04°S, 169.68°E)  
Ushuaia, Argentina (54.82°S, 68.32°W)  
Palmer, Antarctica (64.77°S, 64.05°W)  
Arrival Heights, Antarctica (77.83°S, 166.67°E)  
South Pole Station, Antarctica (90.00°S)

### **UV/Visible Spectrometers**

Eureka, Canada (80.05°N, 86.42°W)  
Ny Ålesund, Spitsbergen (78.92°N, 11.93°E)  
Thule, Greenland (76.53°N, 68.74°W)  
Scoresbysund, Greenland (70.48°N, 21.97°W)  
Kiruna, Sweden (67.84°N, 20.41°E)  
Sodankylä, Finland (67.37°N, 26.65°E)  
Zhigansk, Russia (66.8°N, 123.4°E)

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Salekhard, Russia (66.5°N, 66.7°E)  
Harestua, Norway (60.2°, 10.8°E)  
Zvenigorod, Russia (55.7°N, 36.8°E)  
Aberystwyth, UK (52.4°N, 4.1°W)  
Jungfrauoch, Switzerland (46.55°N, 7.98°E)  
Moshiri, Japan (44.4°N, 142.3°E)  
Observatoire Haute Provence, France (43.94°N, 5.71°E)  
Rikubetsu, Japan (43.46°N, 143.77°E)  
Issyk-Kul, Kyrgyz Republic (42.6°N, 77.0°E)  
Kiso, Japan (35.8°N, 137.6°E)  
Izaña (Tenerife), Spain (28.30°N, 16.48°W)  
Mauna Loa, HI, USA (19.54°N, 155.58°W)  
Tarawa, Kiribati Republic (1.4°N, 172.9°E)  
Ciater/Bandung, Indonesia (6.4°S, 107.4°E)  
Reunion Island, St. Denis, France (20.9°S, 55.5°E)  
Bauru, Brazil (22.3°S, 49.0°W)  
Lauder, New Zealand (45.04°S, 169.68°E)  
Kerguelen Island (49.3°S, 70.3°E)  
Rio Gallegos, Argentina (51.60°S, 69.32°W)  
Macquarie Island, Australia (54.50°S, 158.95°E)  
Ushuaia, Argentina (54.82°S, 68.32°W)  
Marambio Station, Antarctica (64.23°S, 56.63°W)  
Faraday, Antarctica (65.25°S, 64.27°W)  
Dumont d'Urville, Antarctica (66.67°S, 140.01°E)  
Rothera, Antarctica (67.57°S, 68.13°W)  
Syowa Base, Antarctica (69.01°S, 39.59°E)  
Neumayer Station, Antarctica (70.62°S, 8.37°E)  
Dôme C/ Concordia, Antarctica (75.1°S, 123.35°E)  
Arrival Heights, Antarctica (77.83°S, 166.67°E)  
McMurdo Station, Antarctica (77.85°S, 166.63°E)  
Belgrano II Station, Antarctica (77.87°S, 34.62°W)