A meteorological and blowing snow dataset (2000-2016) from a high-altitude alpine site (Col du Lac Blanc, France, 2 720 m a.s.l.)

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Supplementary Materials

Abstract

Overview of meteorological and blowing snow data from the Col du Lac Blanc experimental site (2720 m altitude, 45.13°N, 6.11°E) from 2000 to 2016. Mean and maximal wind speed are taken from AWS Lac Blanc. The shaded areas represent the period of occurrence of blowing snow (with and without concurrent snowfall) determined by the expert method. Blowing snow fluxes measured by Snow Particles Counters (SPC) are available from winter 2010/2011. Supplementary materials also includes the index of of 500*500m Digital Elevation Model covering Col du Lac Blanc studying area (1,5 km²).

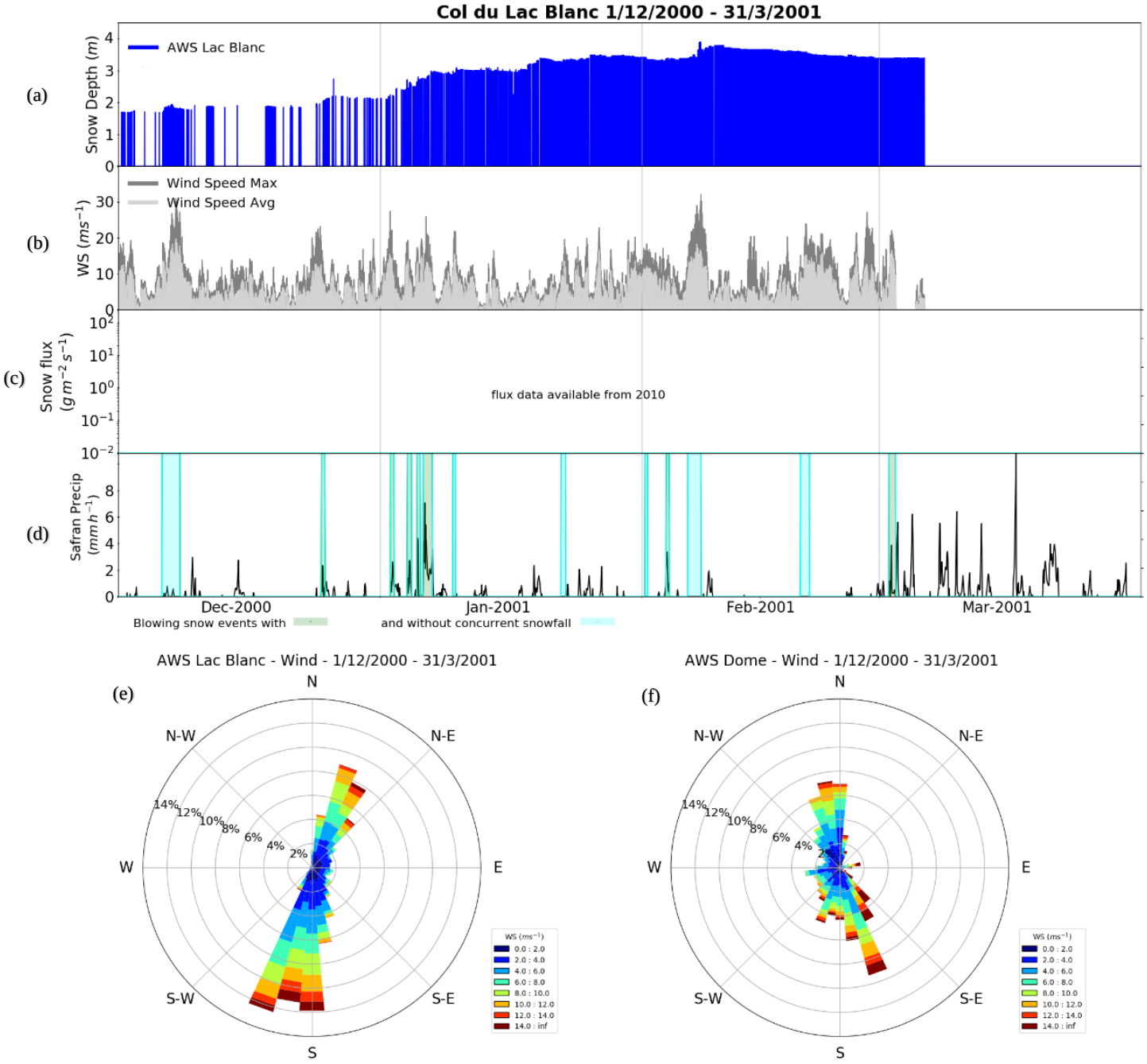

Figure 1: Meteorological and blowing snow data for winter 2000-2001: (a) Snow depth at AWS Lac Blanc, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc and (f) wind rose for AWS Dome.

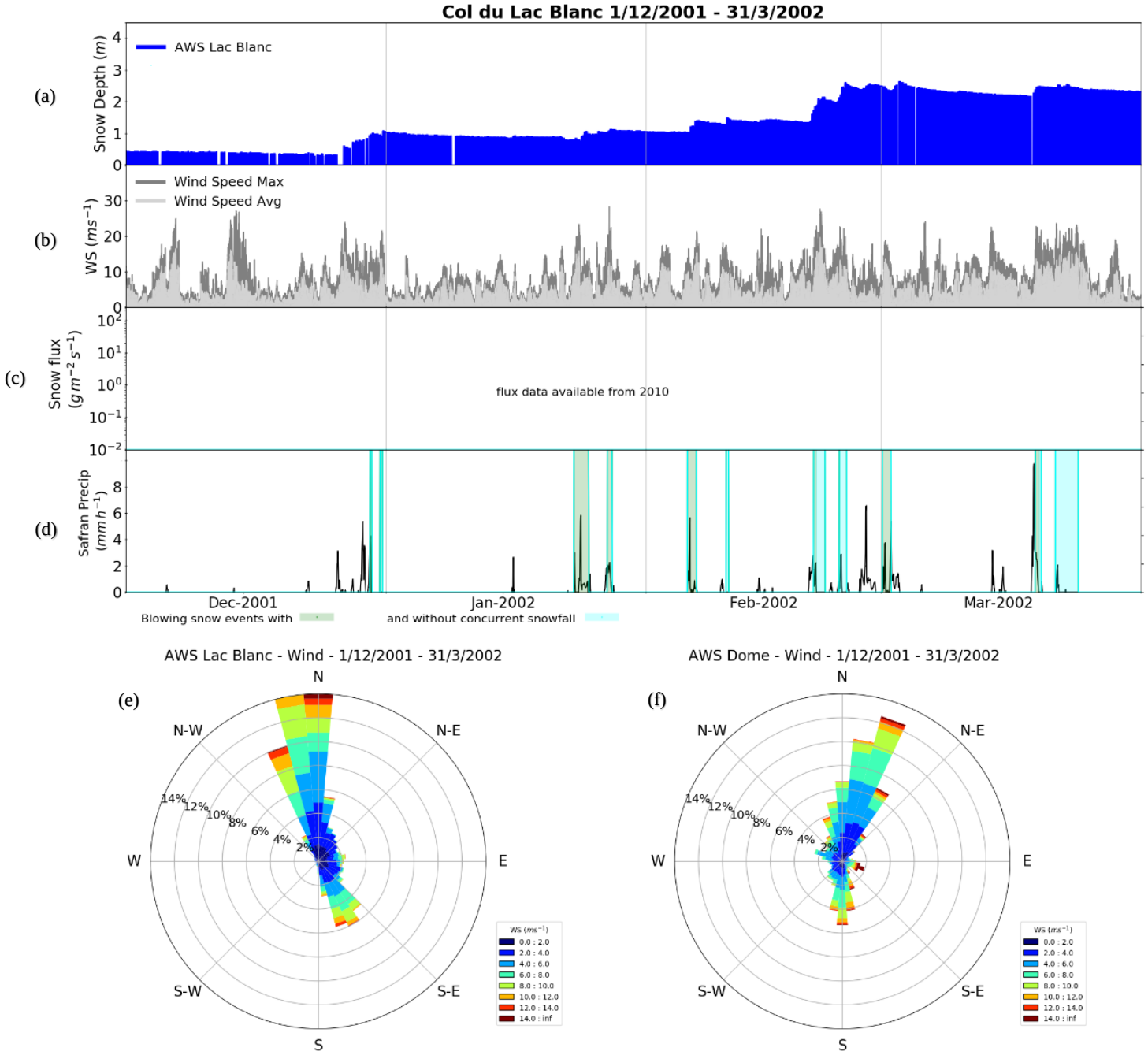

Figure 2: Meteorological and blowing snow data for winter 2001-2002: (a) Snow depth at AWS Lac Blanc, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc and (f) wind rose for AWS Dome.

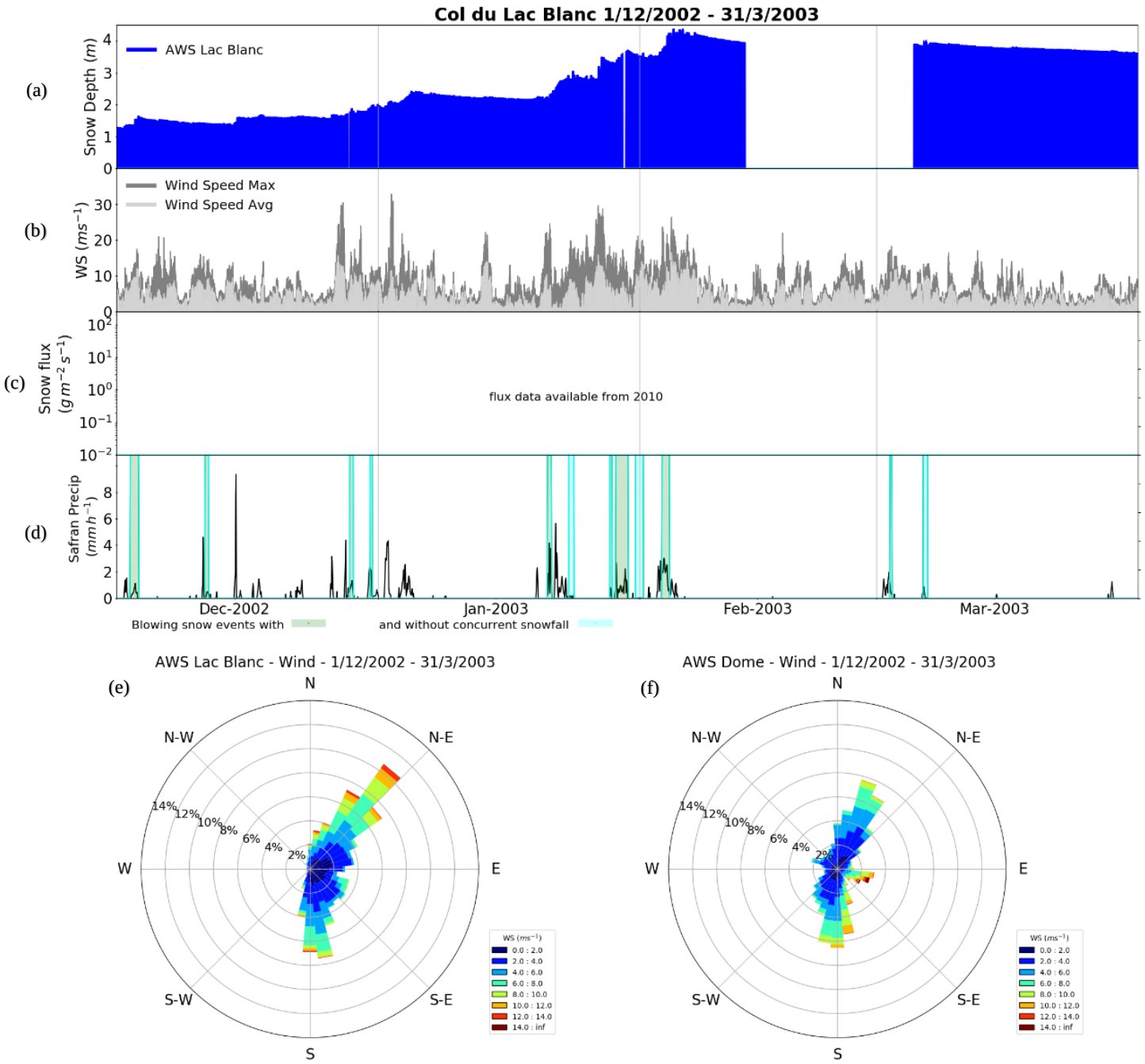

Figure 3:Meteorological and blowing snow data for winter 2002-2003: (a) Snow depth at AWS Lac Blanc, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc and (f) wind rose for AWS Dome.

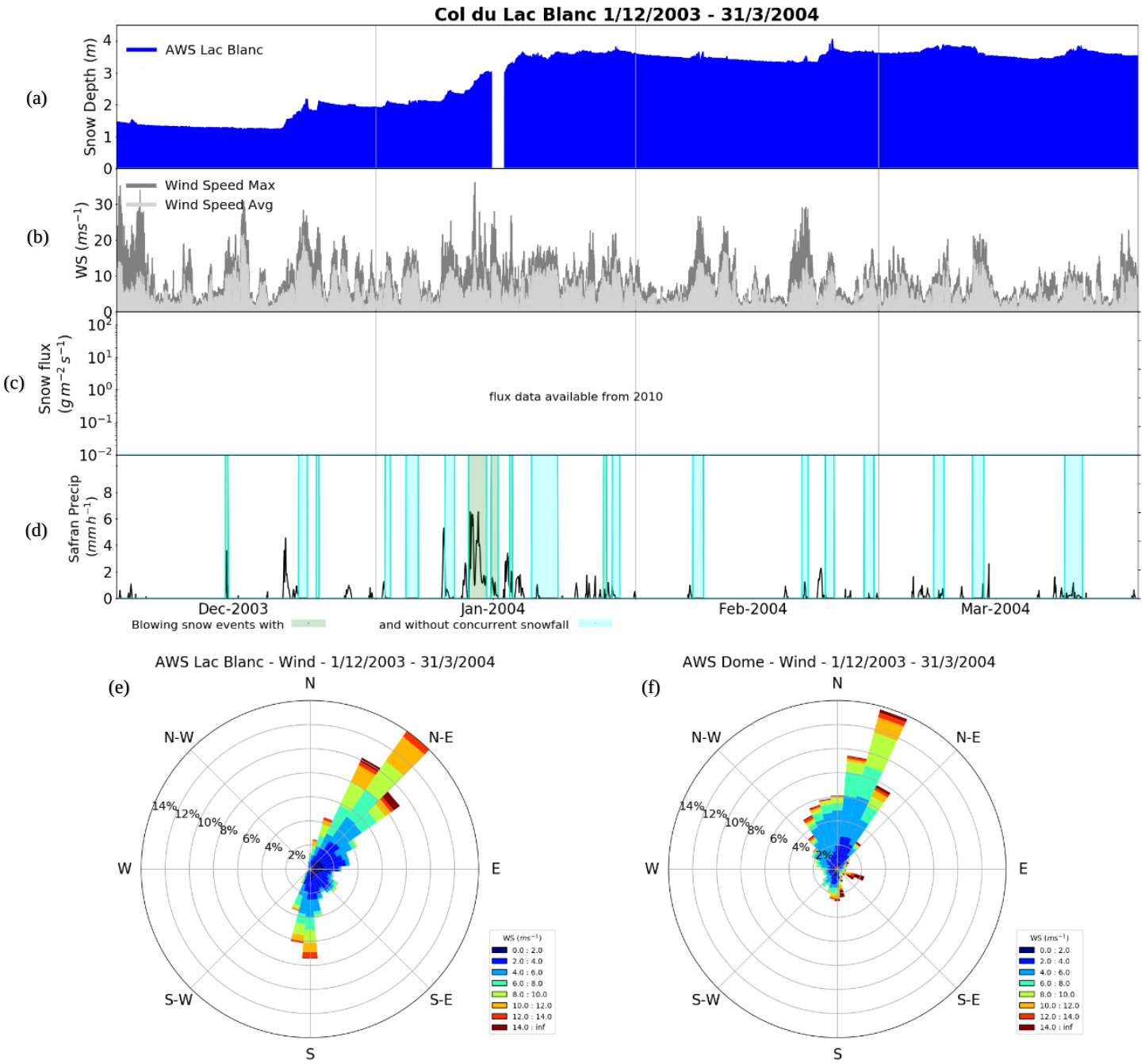

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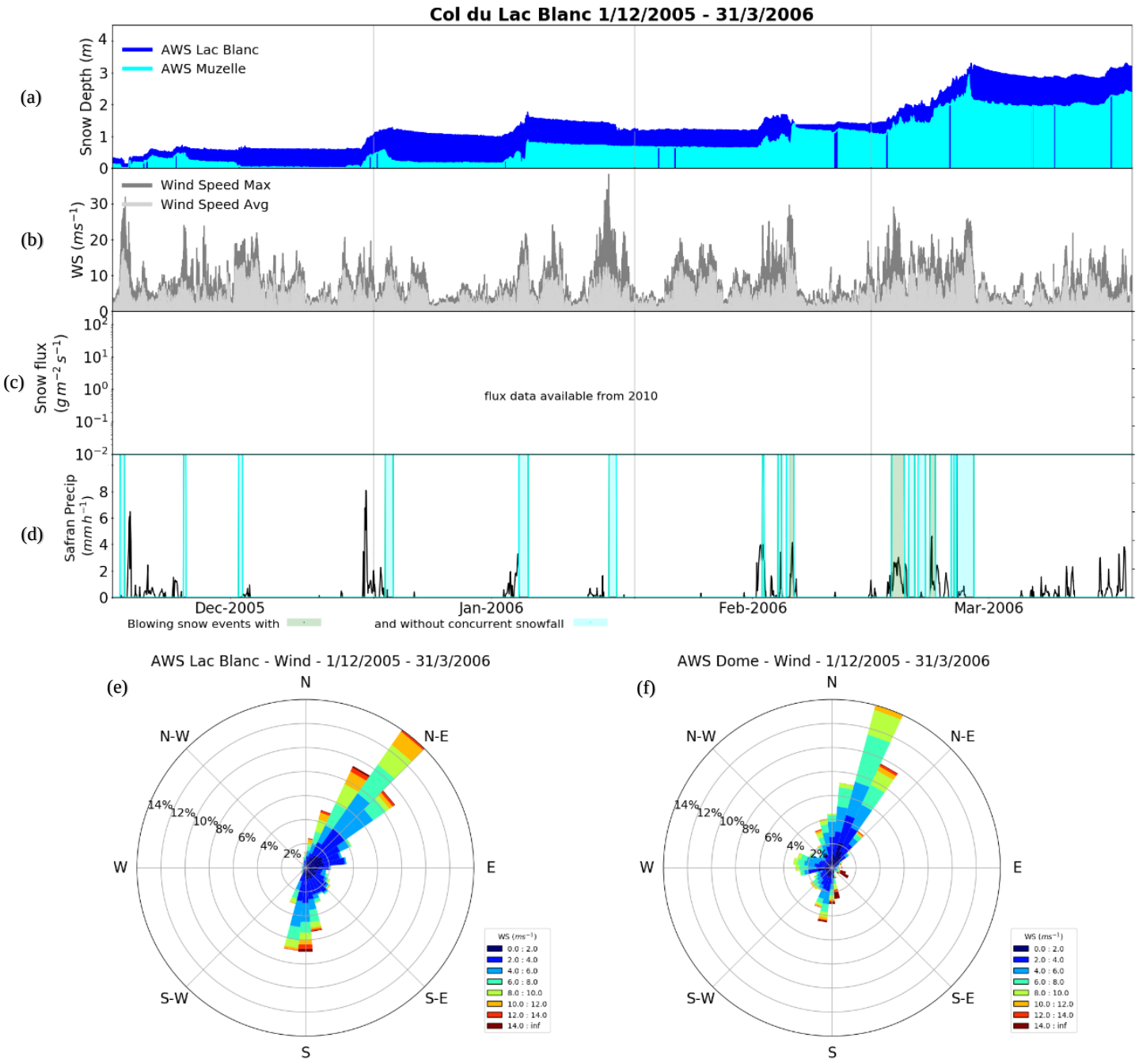
Figure 4: Meteorological and blowing snow data for winter 2003-2004: (a) Snow depth at AWS Lac Blanc, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc and (f) wind rose for AWS Dome.



40 **Figure 5: Meteorological and blowing snow data for winter 2004-2005: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc and (f) wind rose for AWS Dome.**

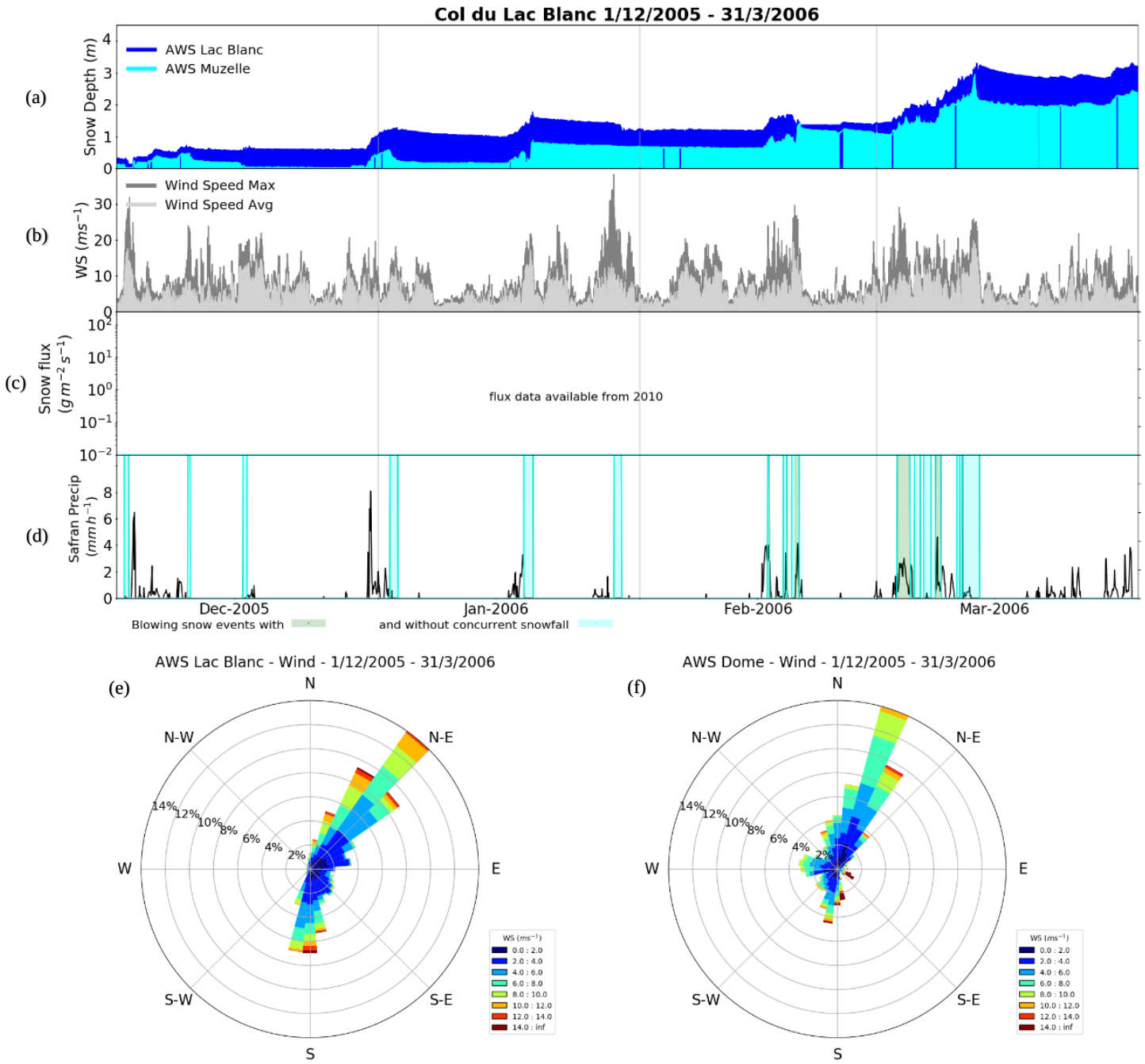


Figure 6: Meteorological and blowing snow data for winter 2005-2006: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc and (f) wind rose for AWS Dome.

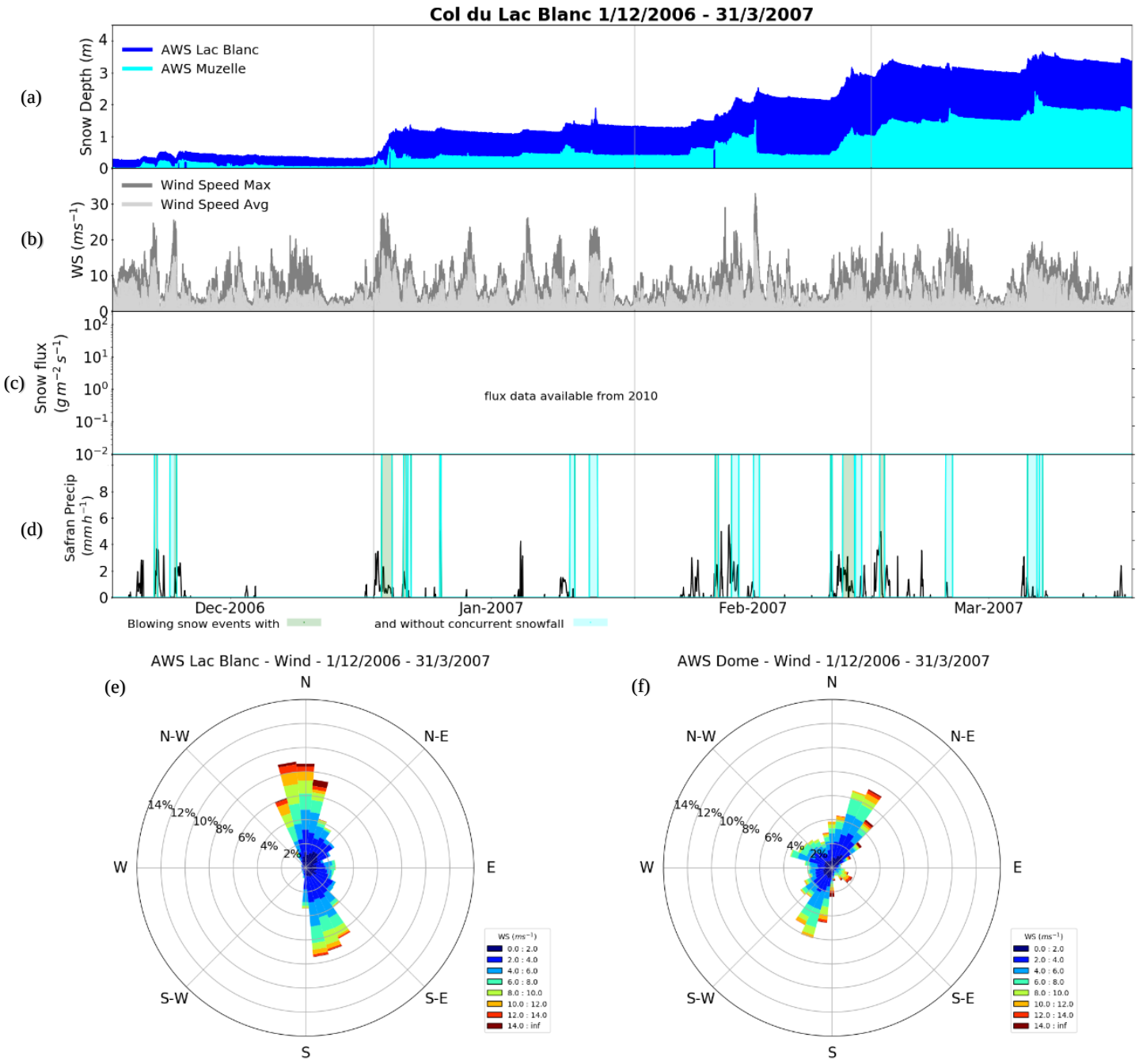


Figure 7: Meteorological and blowing snow data for winter 2006-2007: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc and (f) wind rose for AWS Dome.

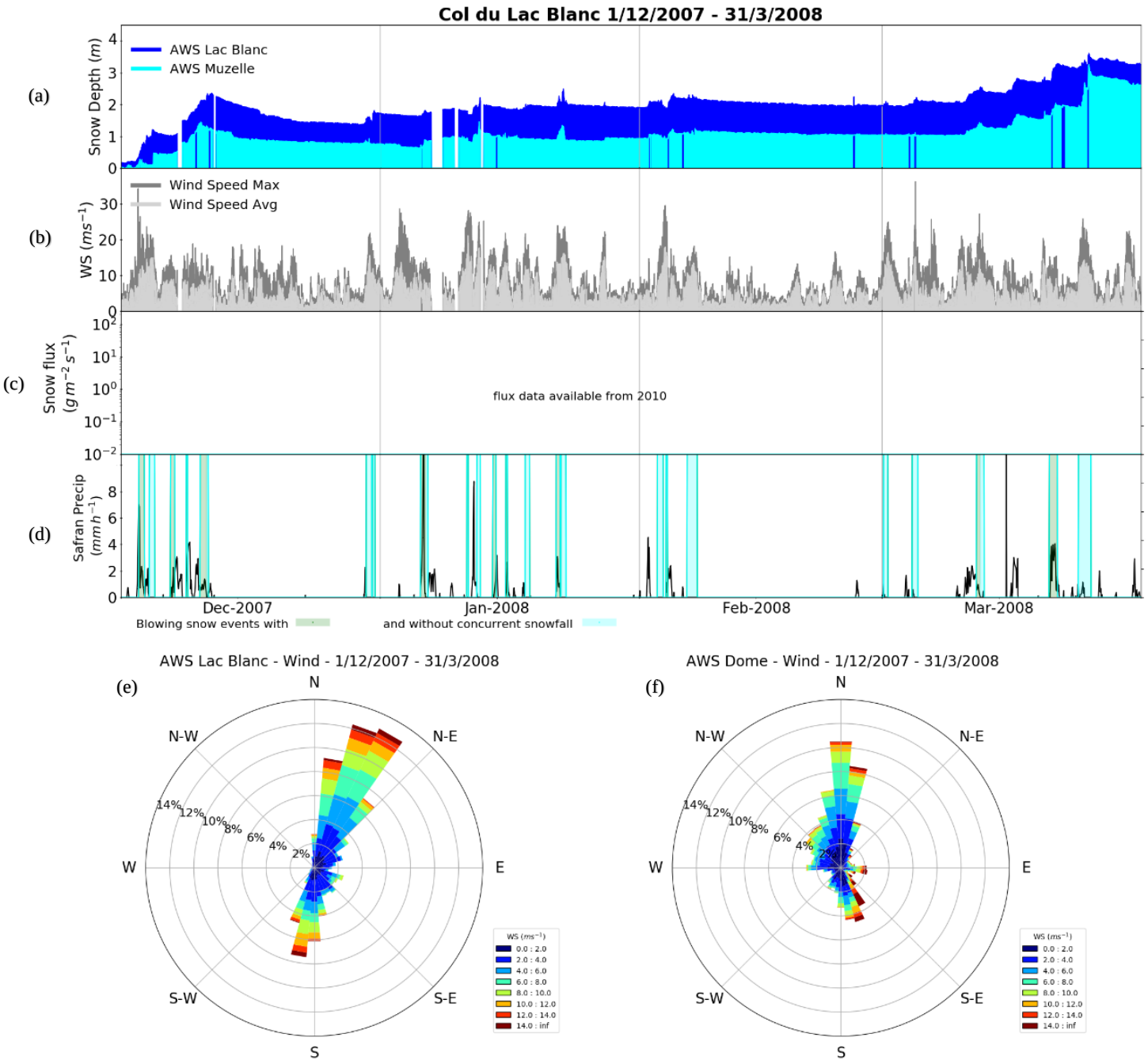


Figure 8: Meteorological and blowing snow data for winter 2007-2008: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc and (f) wind rose for AWS Dome.

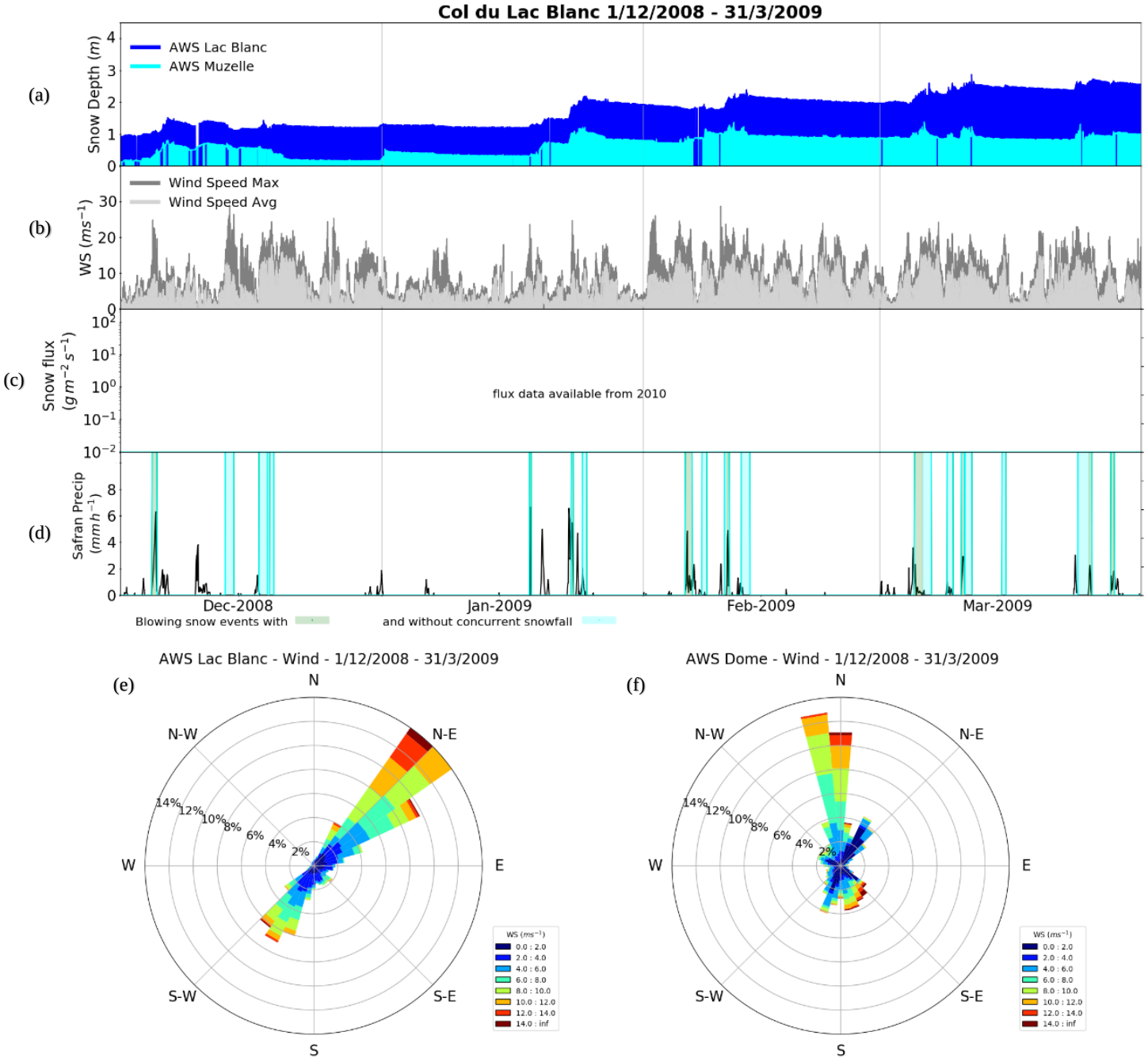


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Figure 9: Meteorological and blowing snow data for winter 2008-2009: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc and (f) wind rose for AWS Dome.

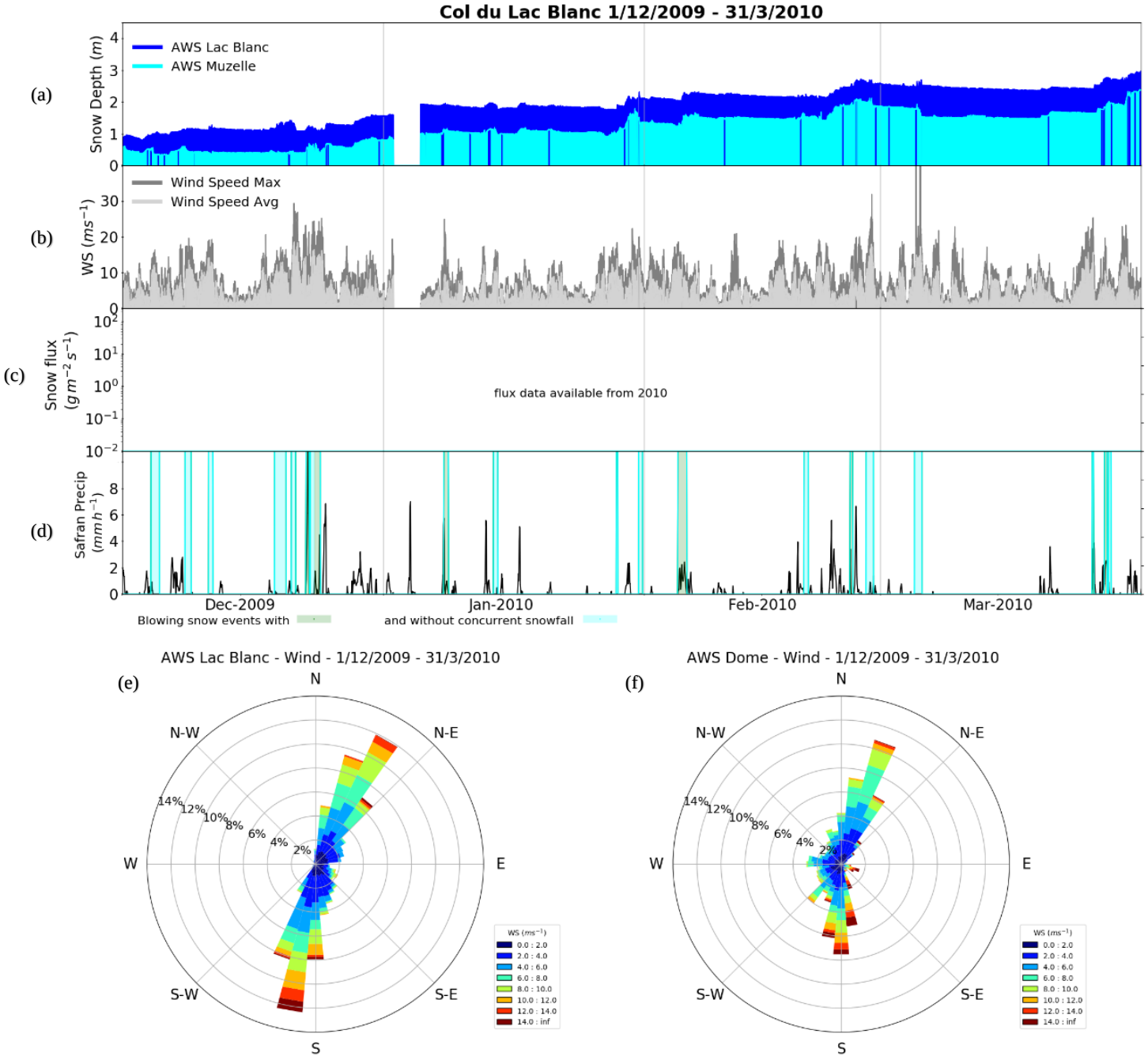

Figure 10: Meteorological and blowing snow data for winter 2009-2010: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc and (f) wind rose for AWS Dome.

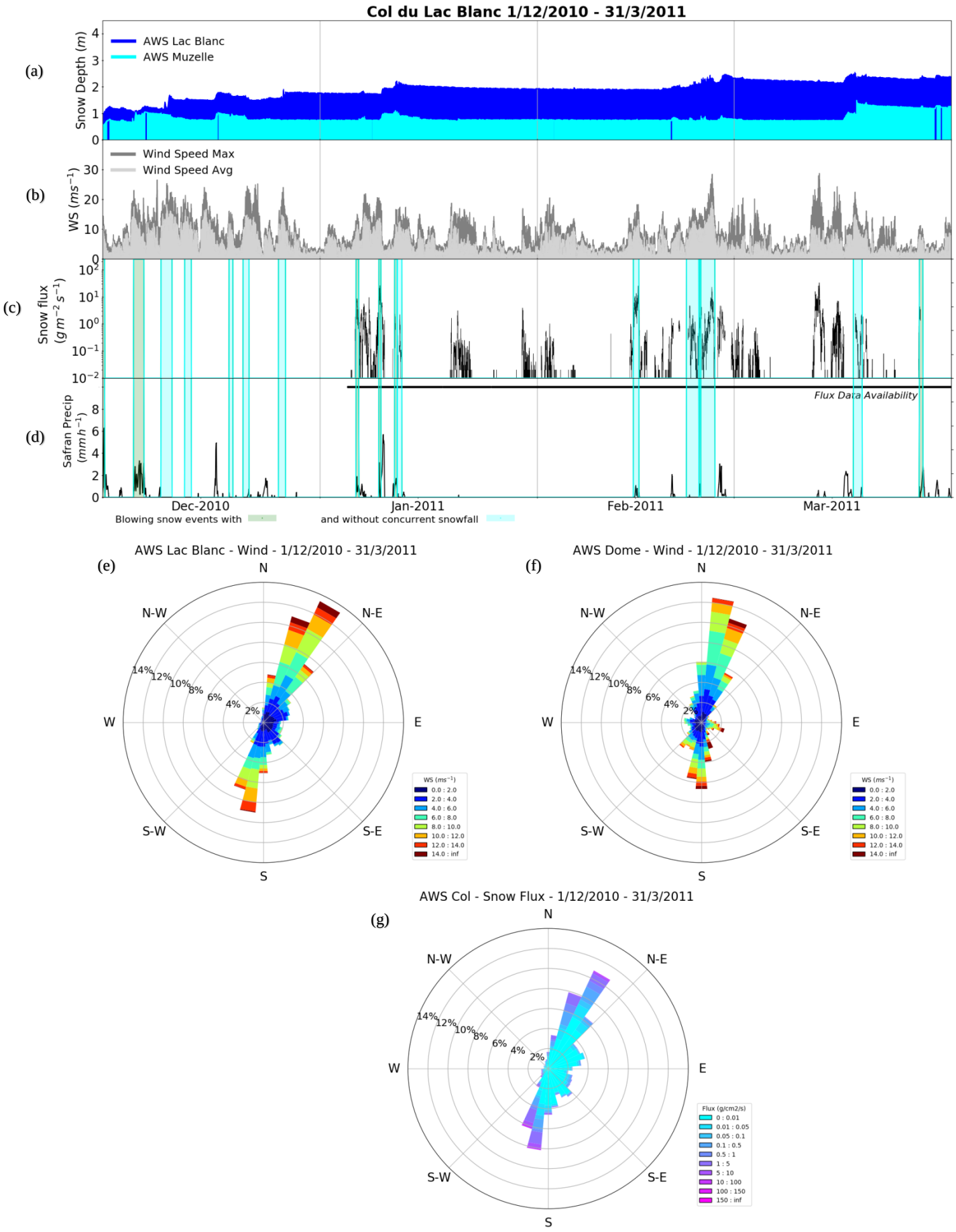

Figure 11: Meteorological and blowing snow data for winter 2010-2011: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database and blowing snow fluxes from SPC, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc, (f) wind rose for AWS Dome and (g) blowing snow fluxes rose at AWS Col with flux vertically integrated over 1 m between 0.2 and 1.2 m and AWS Lac Blanc wind.

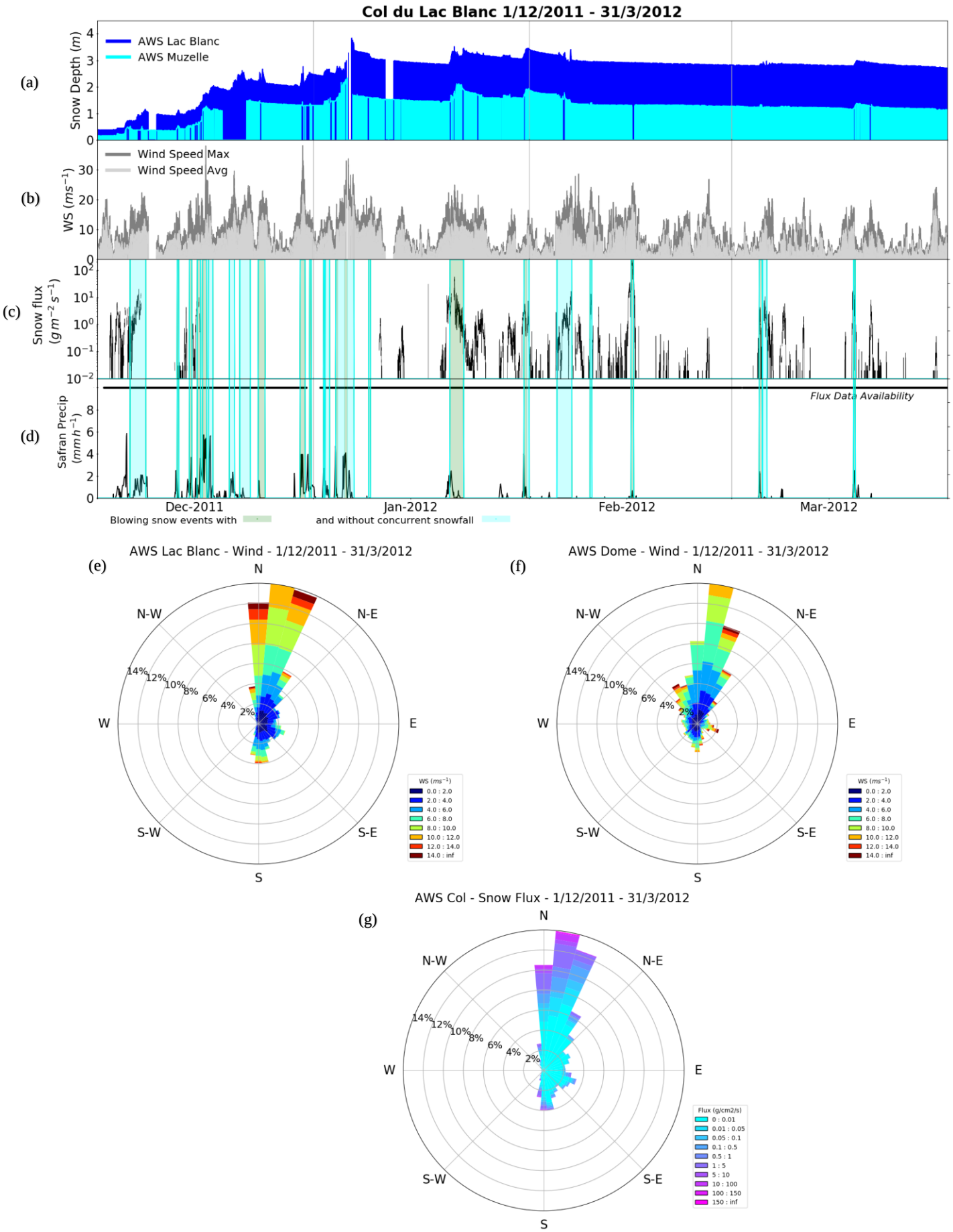

Figure 12: Meteorological and blowing snow data for winter 2011-2012: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database and blowing snow fluxes from SPC, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc, (f) wind rose for AWS Dome and (g) blowing snow fluxes rose at AWS Col with flux vertically integrated over 1 m between 0.2 and 1.2 m and AWS Lac Blanc wind.

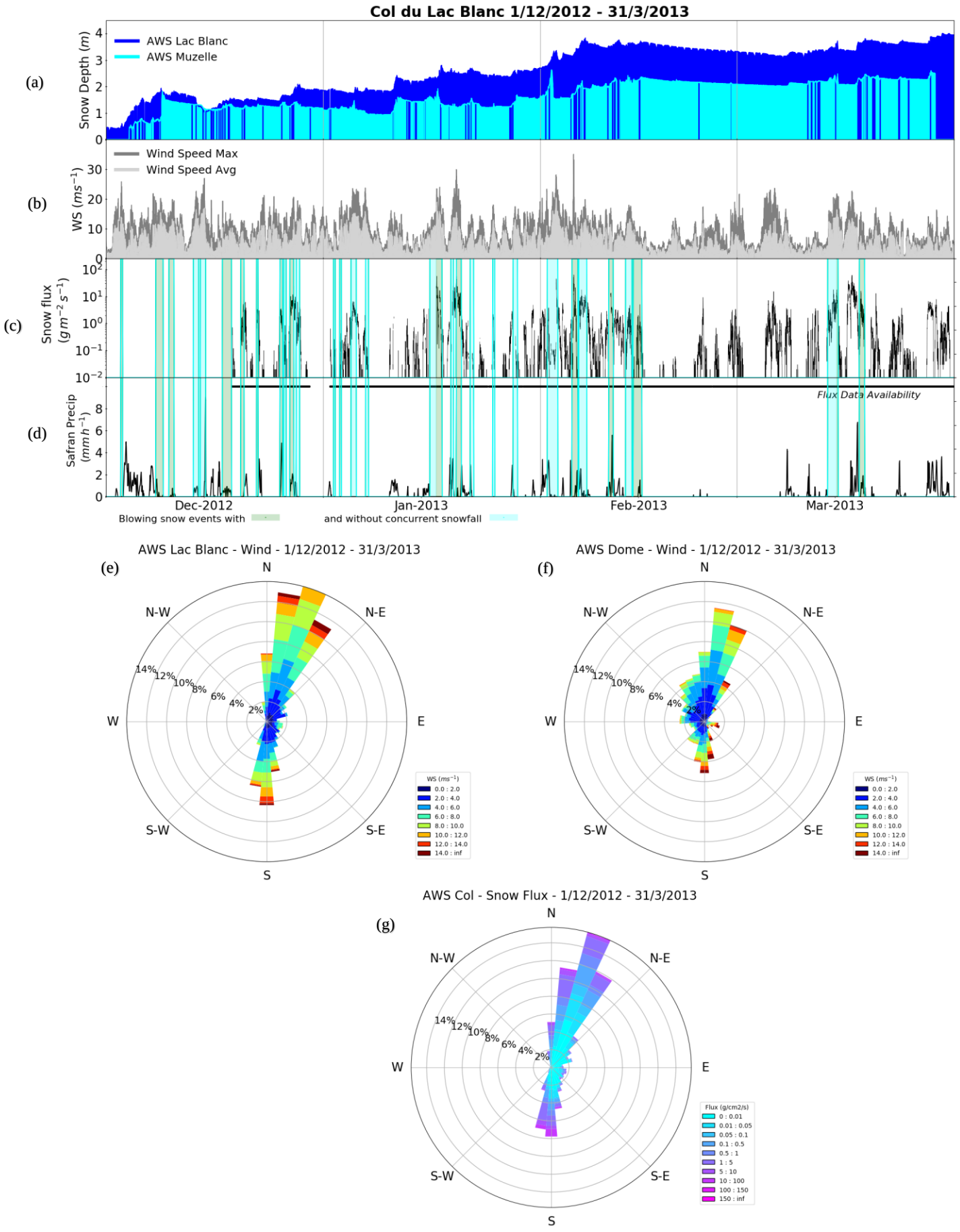

Figure 13: Meteorological and blowing snow data for winter 2012-2013: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database and blowing snow fluxes from SPC, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc, (f) wind rose for AWS Dome and (g) blowing snow fluxes rose at AWS Col with flux vertically integrated over 1 m between 0.2 and 1.2 m and AWS Lac Blanc wind.

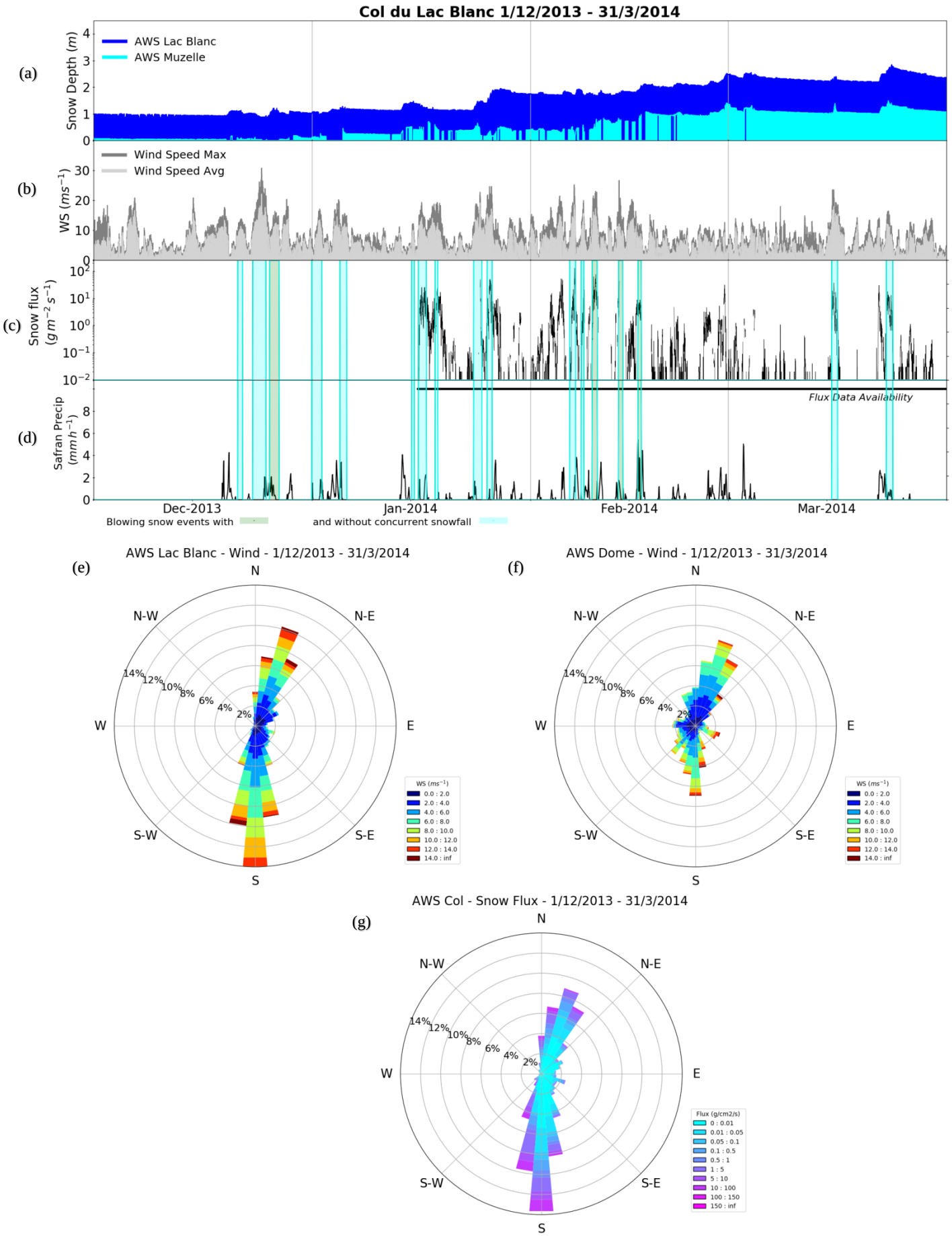

Figure 14: Meteorological and blowing snow data for winter 2013-2014: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database and blowing snow fluxes from SPC, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc, (f) wind rose for AWS Dome and (g) blowing snow fluxes rose at AWS Col with flux vertically integrated over 1 m between 0.2 and 1.2 m and AWS Lac Blanc wind.

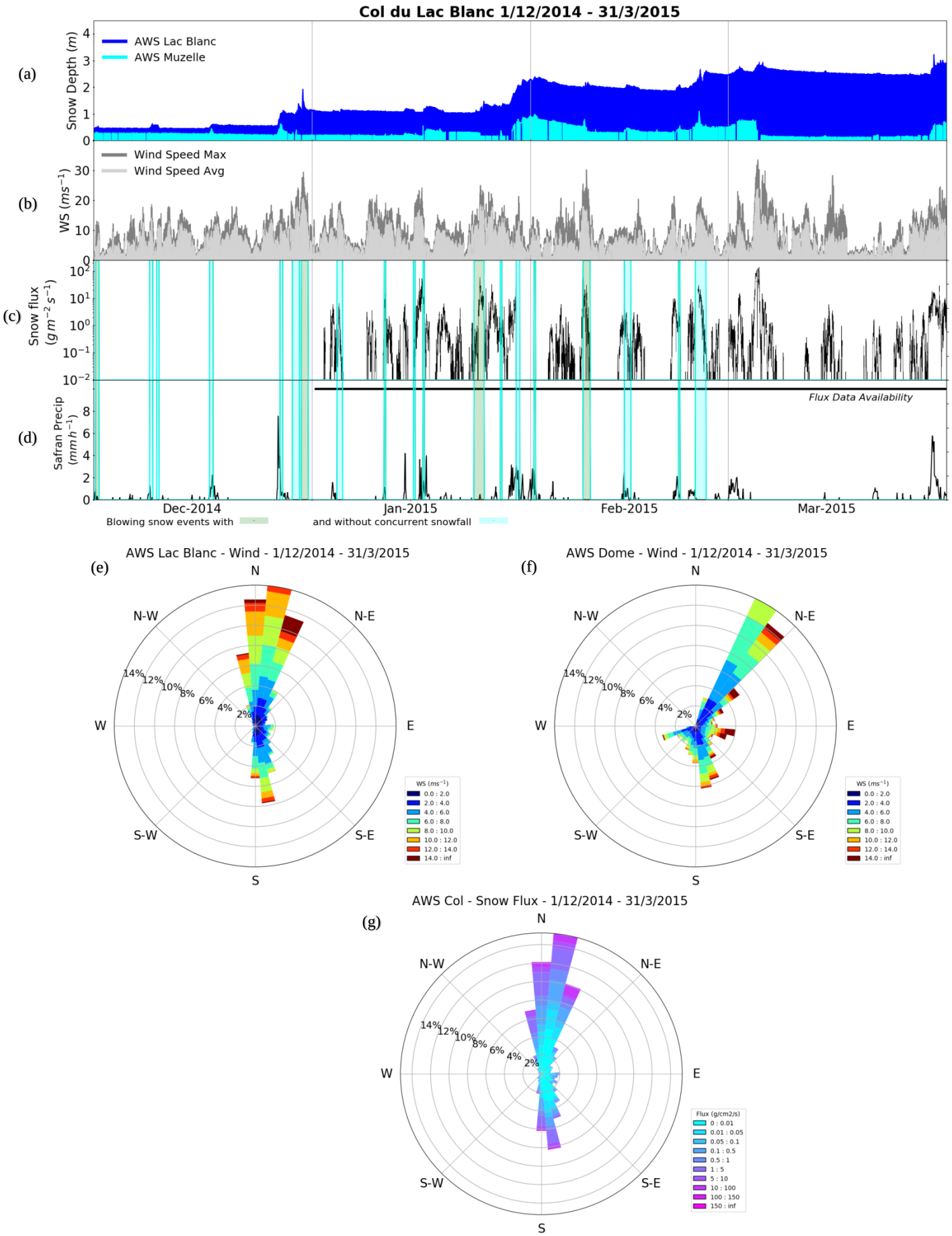

Figure 15: Meteorological and blowing snow data for winter 2014-2015: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database and blowing snow fluxes from SPC, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc, (f) wind rose for AWS Dome and (g) blowing snow fluxes rose at AWS Col with flux vertically integrated over 1 m between 0.2 and 1.2 m and AWS Lac Blanc wind.

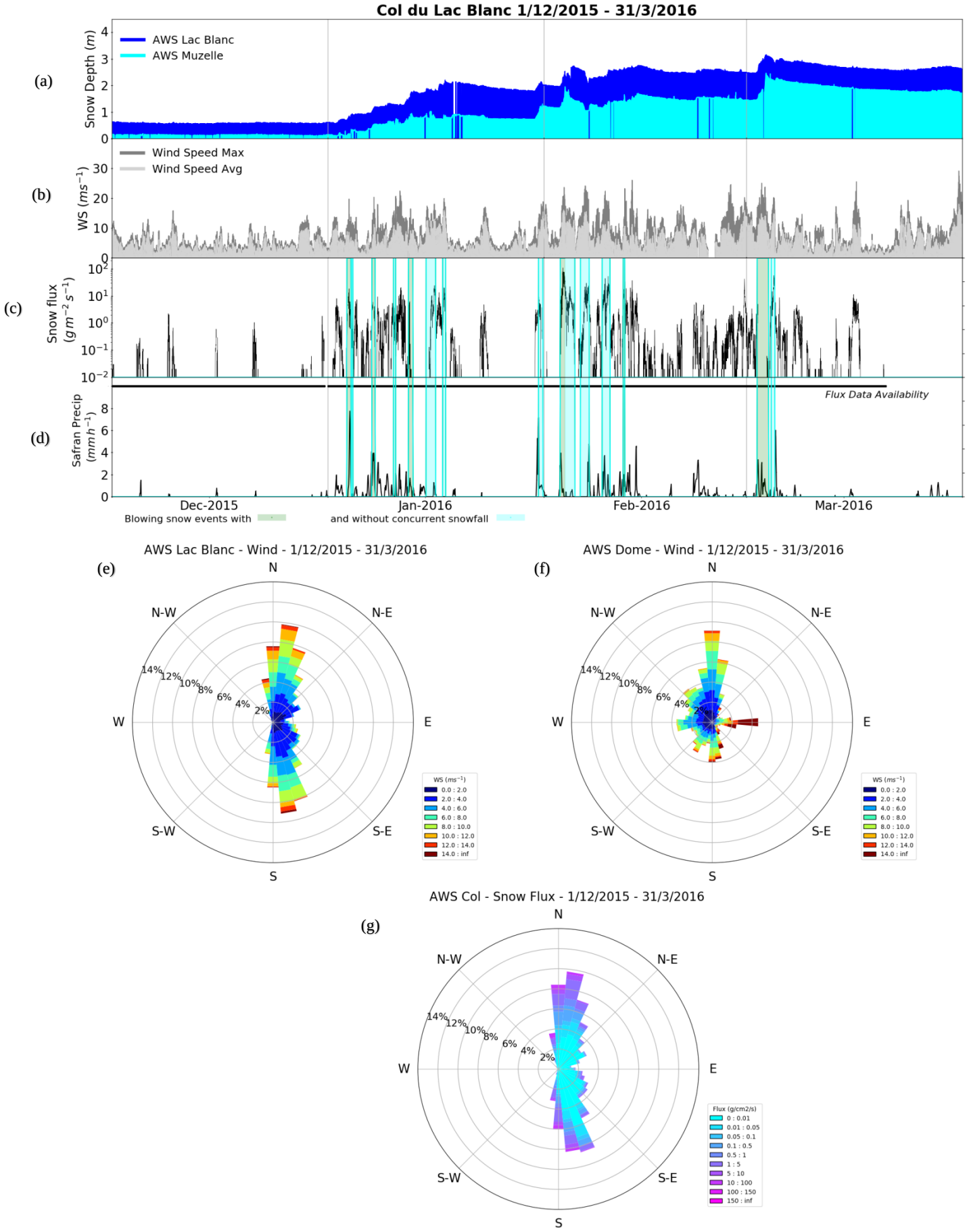

Figure 16: Meteorological and blowing snow data for winter 2015-2016: (a) Snow depth at AWS Lac Blanc and AWS Muzelle, (b) Mean and maximal wind speed at AWS Lac Blanc, (c) Blowing snow occurrence from expert database and blowing snow fluxes from SPC, (d) Snowfall rate from SAFRAN reanalysis, (e) wind rose for AWS Lac Blanc, (f) wind rose for AWS Dome and (g) blowing snow fluxes rose at AWS Col with flux vertically integrated over 1 m between 0.2 and 1.2 m and AWS Lac Blanc wind.

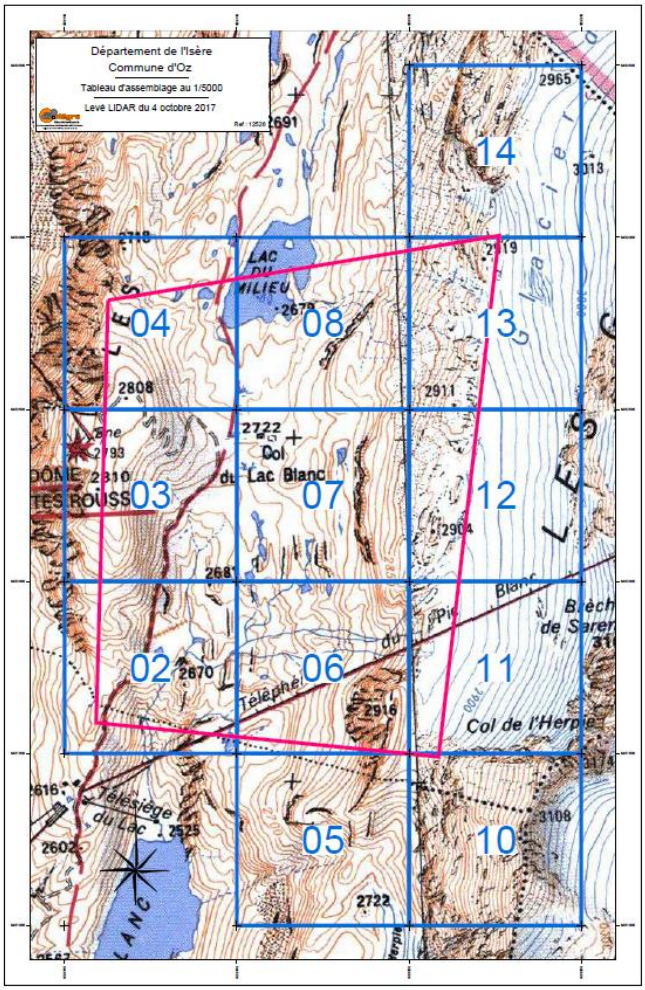

Figure 17: Index of 500*500m files (blue) covering Col du Lac Blanc DEM (red). The Digital Elevation Model of the study area (1,5 km²) is represented as a raster at 20-cm resolution and is provided in RGF 93 Lambert 93 coordinates. It was acquired through airborne lidar with a ground free of snow. The data are provided as 14 files.