# AQMEII-4 Activity 3 Participant Call – September 28, 2021

Attendees: Laurens Ganzeveld, Jesse Bash, Paul Makar, Roberto San Jose Garcia, Chris Holmes, Olivia Clifton, Christian Hogrefe, Donna Schwede

- Update on data sets
    - Easter Bush update for a time error was sent out after the last meeting
    - Ispra site notes
        - Vd is absolute value (so always positive); but you can recalculate to get the correct sign
        - PAR measurements, observationalist thinks the small positive values during night-time can be explained by the uncertainty of the instrument and also by the lights of the nearby urban area.
        - Shortwave radiation can also be a small negative value
        - Update will be coming as the flagging for AQMEII needs to be updated based on conversations with the observationalist
    - Hyytiala - working to get additional soil moisture and leaf wetness
    - Reference height for the sites (see table below from TN draft)
        - **Everyone should use the heights in the table for the first intercomparison**
            - **This might require some reruns for data already submitted**
        - Sensitivity tests should include alternate approaches including displacement height
    - Relative humidity fill value
        - From TN:
            - *For sites where leaf wetness data are not available as input data (Harvard Forest, Ramat Hanadiv, and Hyytiälä), leaf wetness values are approximated using a simple approach based on relative humidity. If half hourly or hourly relative humidity is greater than 85%, then leaves are assumed to be wet. This approach is similar to Van Jaarsveld (2004) where a threshold value of 87% is used for the Netherlands. While the threshold likely varies by site (Sentelhas et al., 2008), data are not available to develop a more detailed approach. However, sensitivity simulations will be designed to test relative humidity thresholds and different approaches for estimating leaf wetness (e.g., from precipitation).*
        - Proposal from Pleim and Ran

```
IF ( precip.GT. 3.0e-7 )  THEN
  wetlf = 1.0
else if ( (0.6 + ubar)*(100.0-rh) .LE. 19.0 ) then
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wetlf = 0.5
else
wetlf = 0.0
end if

- It was decided to keep the threshold value and use the proposal as a sensitivity test

- Update on model runs
    - Roberto shared some results to show the differences between older versions of the data sets and newer ones
    - Important to upload base runs first, without any model tuning
- Driving point models with data from grid models (not discussed)
- Sensitivity tests (not discussed)
- Publication plans (not discussed)

**Table 5: Details Regarding Ozone Fluxes at Flux Tower Sites**

| Site | Time Period | Measurement Type for Ozone Flux | Measurement Height of the Ozone Flux | Fast Ozone Analyzer | More Details on Ozone Fluxes [a] | References for Ozone Fluxes |
|---|---|---|---|---|---|---|
| Auchencorth Moss | 1 January 2016 00:00 – 1 January 2018 00:00 LT | Eddy covariance | 4.15 m | Gesellschaft Für Angewandte Systemtechnik (Güsten et al., 1992; Güsten and Heinrich, 1996) clone (Coyle, 2005) | Data processing and quality control and assurance follow Muller et al. (2010) for Easter Bush. Absolute ozone fluxes are calculated via the Ratio Offset Method (Muller et al., 2010). | |
| Borden Forest | 31 December 2007 19:00 – 30 May 2013 15:00 LT | Gradient | 33 m | N/A | Data are flagged as less reliable if any of the following is true: ozone mixing ratio < 1.0 ppbv, wind speed < 1.0 m $s^{-1}$, deposition velocity >1.5 x the deposition velocity estimated with only aerodynamic and quasi-laminar sublayer resistances (Wu et al., 2016), or the vertical ozone gradient < 0. | Wu et al. (2016, 2018) |
| Bugacpuszta | 1 August 2012 00:30 – 13 January 2014 23:30 LT | Eddy covariance | 4 m | Dry chemiluminescence (Zahn et al., 2012) | | Horváth et al. (2018) |
| Easter Bush | 18 May 2001 16:00 – 1 January 2013 00:00 LT | Gradient | 2.1 m | N/A | | Coyle (2005); Muller et al. (2009) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Ispra | 1 January 2013 00:30 – 31 December 2015 23:30 LT | Eddy covariance | 38 m | Sextant (New Zealand) FOS dry chemiluminescence | High frequency (10 Hz) data are processed with EdiRe software (Mauder et al., 2008). Quality tests are performed on ozone fluxes following Foken et al. (2004). Results of quality tests are combined into three quality flags as described in Sabbatini et al. (2018): good quality (flag 0), acceptable quality (flag 1), and bad quality (flag 2). | |
| Harvard Forest | 28 October 1991 00:00 – 12 December 2000 23:00 LT | Eddy covariance | 29 m | Ethene chemiluminescence | | Munger et al. (1996); Clifton et al. (2017, 2019) |
| Hyytiälä | 1 January 2002 00:00 – 31 December 2012 23:30 UTC+2 | Eddy covariance | 23 m | Unisearch Associates Inc. (Concord, Ontario, Canada) LOZ-3 wet chemiluminescence | | Keronen et al. (2003); Altimir et al. (2006); Launiainen et al. (2013); Rannik et al. (2009, 2012) |
| Ramat Hanadiv | 31 July 2015 10:30 - 30 June 2017 21:00 LT | Eddy covariance | 6.3 m | Sextant (New Zealand) FOS V2.0.1 dry chemiluminescence | | Li et al. (2018, 2019) |

[a] Details are only included here when they are missing from the peer-reviewed literature referenced in the last column, or when flagging for unreliable ozone fluxes is used in Figures 1 and 2.