

1 **Supporting Information for ”Can we intercalibrate satellite**
2 **measurements by means of data assimilation? An attempt on**
3 **LEO satellites”**

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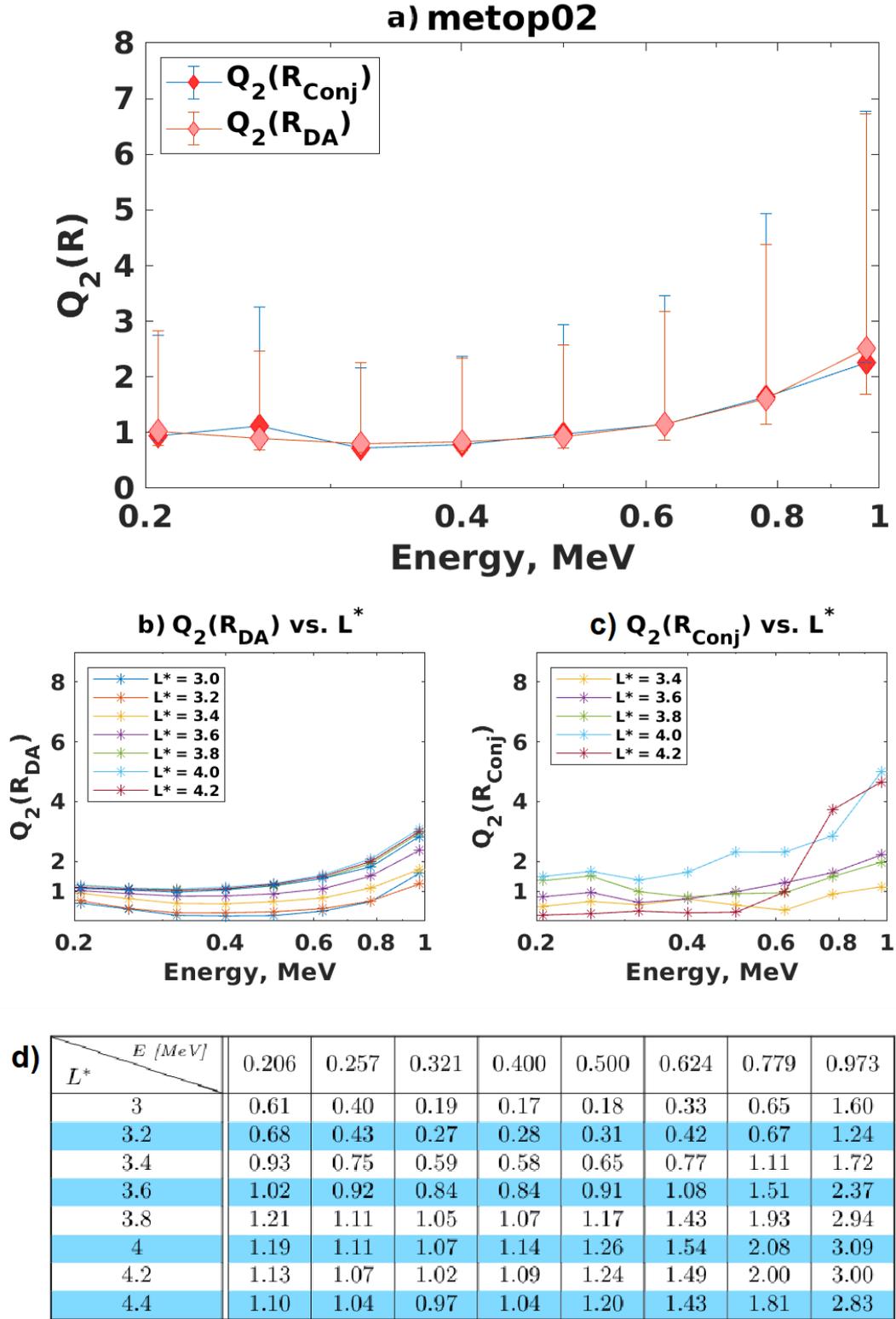


Figure S1. Summarized results for MetOp-02: a) Values of $Q_2(R_{DA})$ and $Q_2(R_{Conj})$ vs. Energy. Plotted in linear scale are the median values of R_{DA} (pink diamonds) and R_{Conj} (red diamonds) estimated for metOp-02 in dependence of the energy channel. Error bars are estimated from the corresponding MAD values and displayed for $Q_2(R_{DA})$ in pink color and for $Q_2(R_{Conj})$ in blue. b) Curves of $Q_2(R_{DA})$ in dependence of the energy channel for metOp-02, color-coded are the curves for each L^* -bin (Y-axes in linear scale). c) Curves of $Q_2(R_{Conj})$ in dependence of the energy channel for metOp-02, color-coded are the curves for each L^* -bin (Y-axes in linear scale). d) Final intercalibration coefficients ($Q_2(R_{DA})$) for estimated for metOp-02 using our new data assimilation approach. The coefficients are given in terms of energy and L^* .

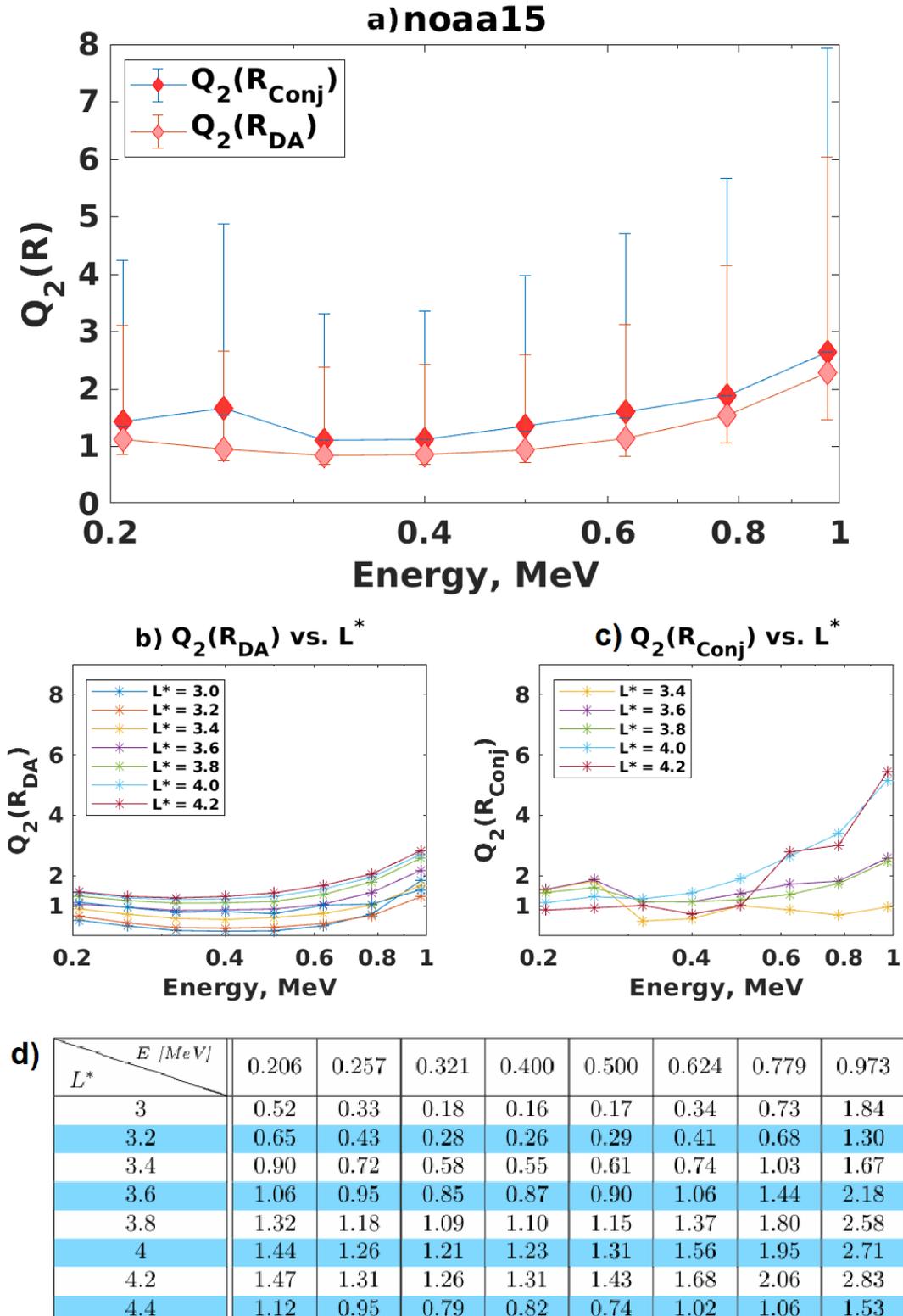


Figure S2. Summarized results for NOAA-15: a) Values of $Q_2(R_{DA})$ and $Q_2(R_{Conj})$ vs. Energy. Plotted in linear scale are the median values of R_{DA} (pink diamonds) and R_{Conj} (red diamonds) estimated for NOAA-15 in dependence of the energy channel. Error bars are estimated from the corresponding MAD values and displayed for $Q_2(R_{DA})$ in pink color and for $Q_2(R_{Conj})$ in blue. b) Curves of $Q_2(R_{DA})$ in dependence of the energy channel for NOAA-15, color-coded are the curves for each L^* -bin (Y-axis in linear scale). c) Curves of $Q_2(R_{Conj})$ in dependence of the energy channel for NOAA-15, color-coded are the curves for each L^* -bin (Y-axis in linear scale). d) Final intercalibration coefficients ($Q_2(R_{DA})$) for estimated for NOAA-15 using our new data assimilation approach. The coefficients are given in terms of energy and L^* .

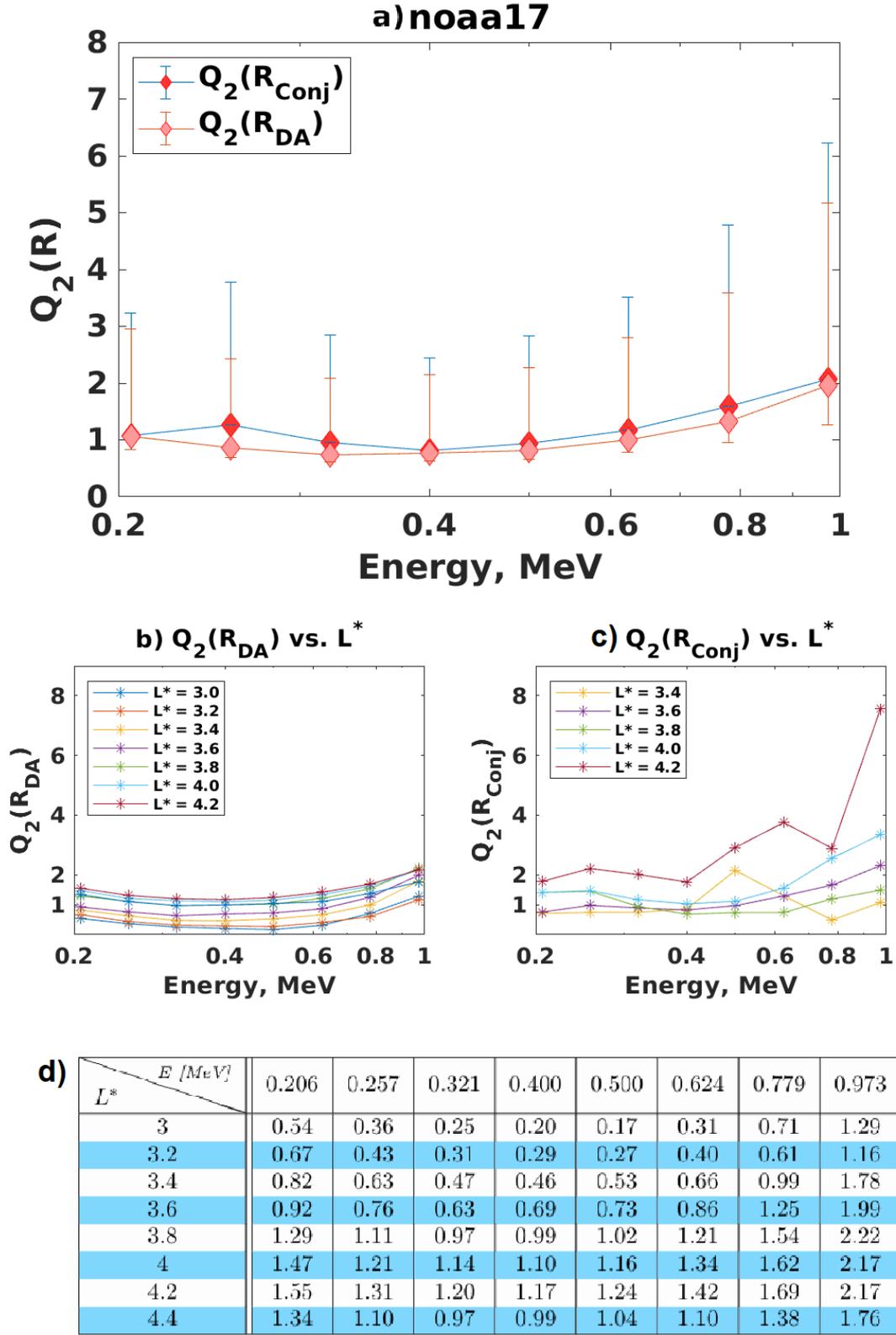


Figure S3. Summarized results for NOAA-17: a) Values of $Q_2(R_{DA})$ and $Q_2(R_{Conj})$ vs. Energy. Plotted in linear scale are the median values of R_{DA} (pink diamonds) and R_{Conj} (red diamonds) estimated for NOAA-17 in dependence of the energy channel. Error bars are estimated from the corresponding MAD values and displayed for $Q_2(R_{DA})$ in pink color and for $Q_2(R_{Conj})$ in blue. b) Curves of $Q_2(R_{DA})$ in dependence of the energy channel for NOAA-17, color-coded are the curves for each L^* -bin (Y-axes in linear scale). c) Curves of $Q_2(R_{Conj})$ in dependence of the energy channel for NOAA-17, color-coded are the curves for each L^* -bin (Y-axes in linear scale). d) Final intercalibration coefficients ($Q_2(R_{DA})$) for estimated for NOAA-17 using our new data assimilation approach. The coefficients are given in terms of energy and L^* . Due to shorter mission duration, the analysis for NOAA-17 was done for the period of October, 2012 till March, 2013.

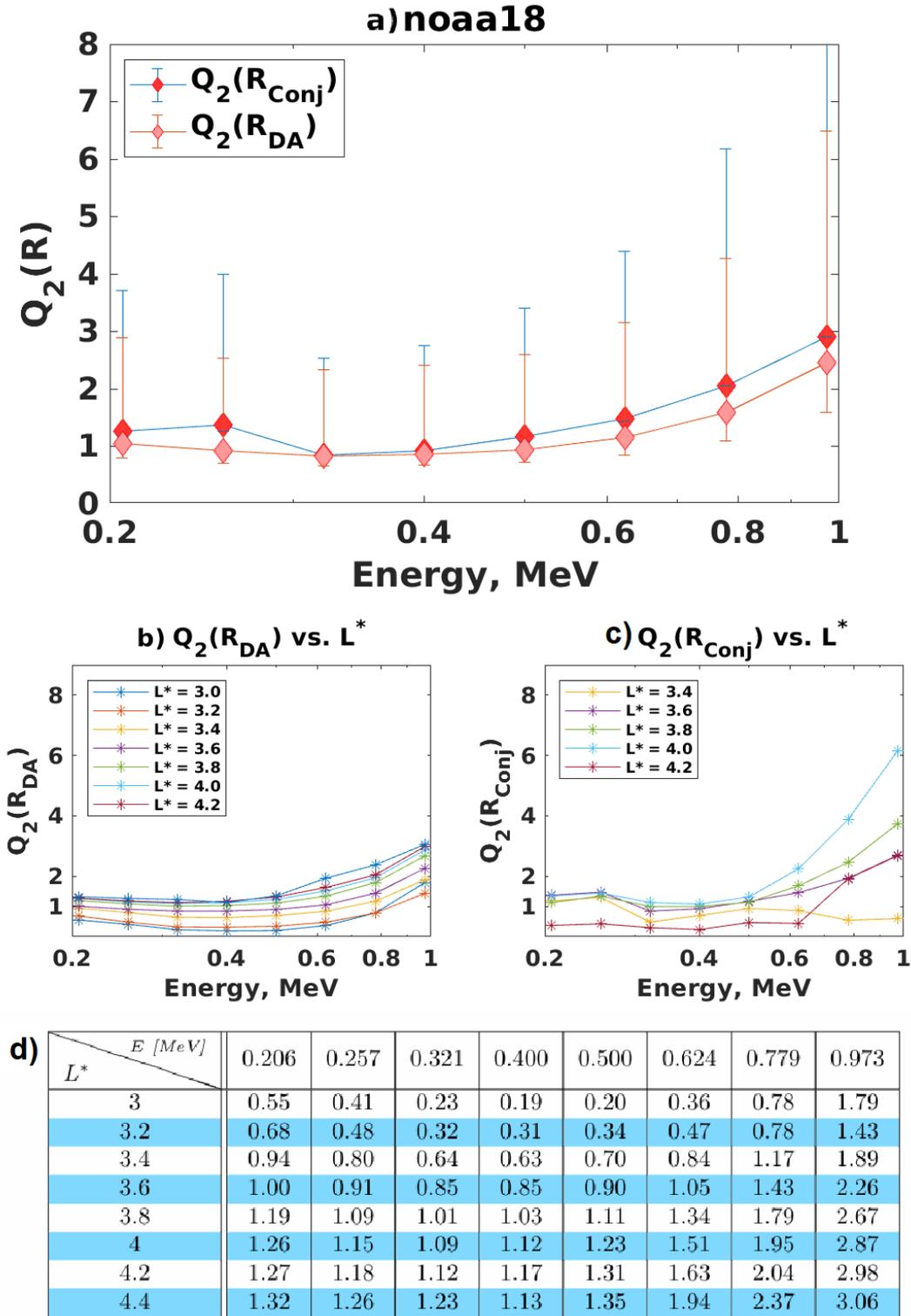


Figure S4. Summarized results for NOAA-18: a) Values of $Q_2(R_{DA})$ and $Q_2(R_{Conj})$ vs. Energy. Plotted in linear scale are the median values of R_{DA} (pink diamonds) and R_{Conj} (red diamonds) estimated for NOAA-18 in dependence of the energy channel. Error bars are estimated from the corresponding MAD values and displayed for $Q_2(R_{DA})$ in pink color and for $Q_2(R_{Conj})$ in blue. b) Curves of $Q_2(R_{DA})$ in dependence of the energy channel for NOAA-18, color-coded are the curves for each L^* -bin (Y-axes in linear scale). c) Curves of $Q_2(R_{Conj})$ in dependence of the energy channel for NOAA-18, color-coded are the curves for each L^* -bin (Y-axes in linear scale). d) Final intercalibration coefficients ($Q_2(R_{DA})$) for estimated for NOAA-18 using our new data assimilation approach. The coefficients are given in terms of energy and L^* .

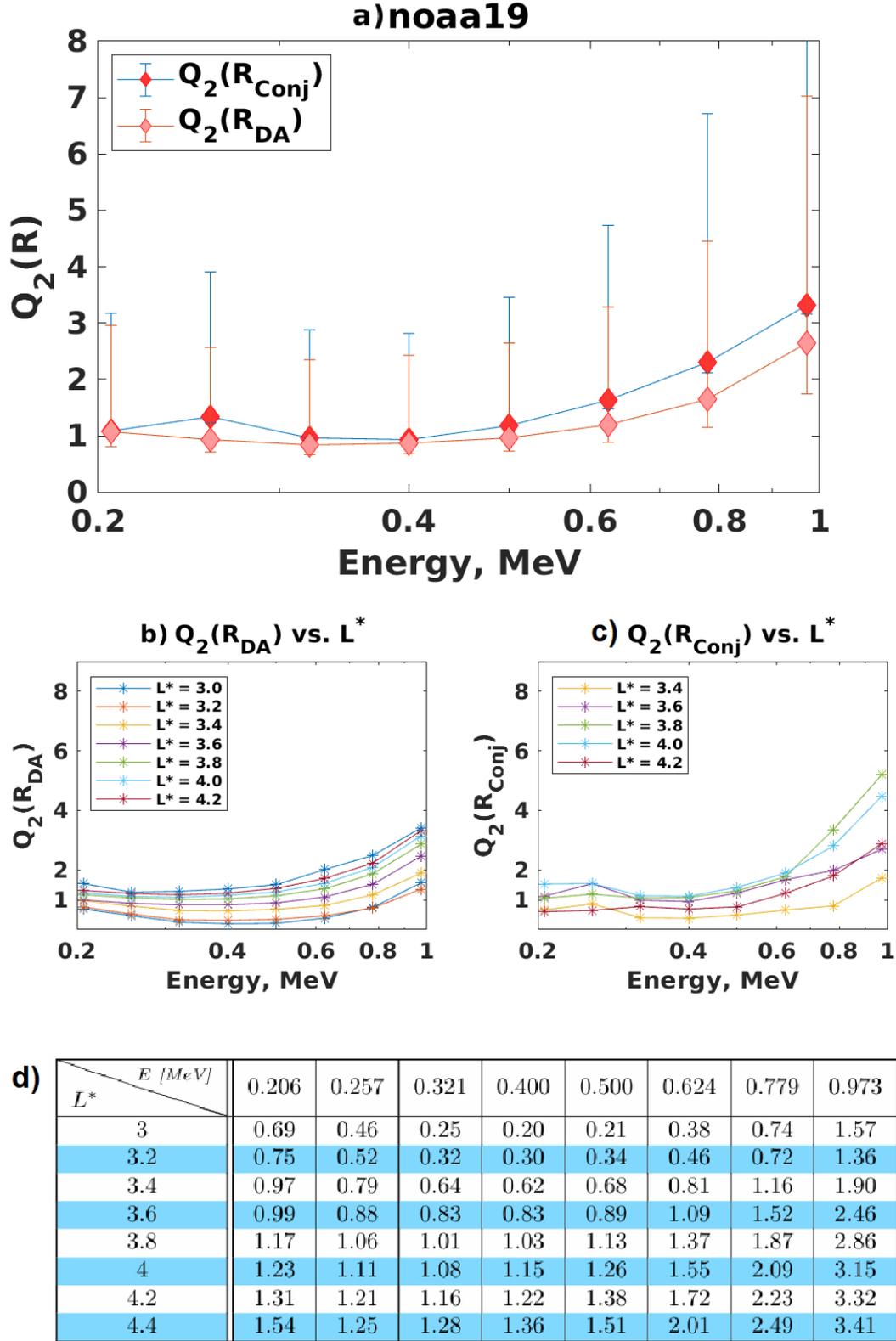


Figure S5. Summarized results for NOAA-19: a) Values of $Q_2(R_{DA})$ and $Q_2(R_{Conj})$ vs. Energy. Plotted in linear scale are the median values of R_{DA} (pink diamonds) and R_{Conj} (red diamonds) estimated for NOAA-19 in dependence of the energy channel. Error bars are estimated from the corresponding MAD values and displayed for $Q_2(R_{DA})$ in pink color and for $Q_2(R_{Conj})$ in blue. b) Curves of $Q_2(R_{DA})$ in dependence of the energy channel for NOAA-19, color-coded are the curves for each L^* -bin (Y-axes in linear scale). c) Curves of $Q_2(R_{Conj})$ in dependence of the energy channel for NOAA-19, color-coded are the curves for each L^* -bin (Y-axes in linear scale). d) Final intercalibration coefficients ($Q_2(R_{DA})$) for estimated for NOAA-19 using our new data assimilation approach. The coefficients are given in terms of energy and L^* .