Supplementary Material for the SIGGRAPH 2012 Paper
An Analytic Model for Full Spectral Sky-Dome Radiance

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1 Supplementary Figures

The figures that are shown on the following pages are not in the paper solely due to space constraints, but hopefully enable readers of the paper in assessing the quality of the data fitting we performed. All the charts in this supplement are for a ground albedo of 0; other albedo values are qualitatively similar.

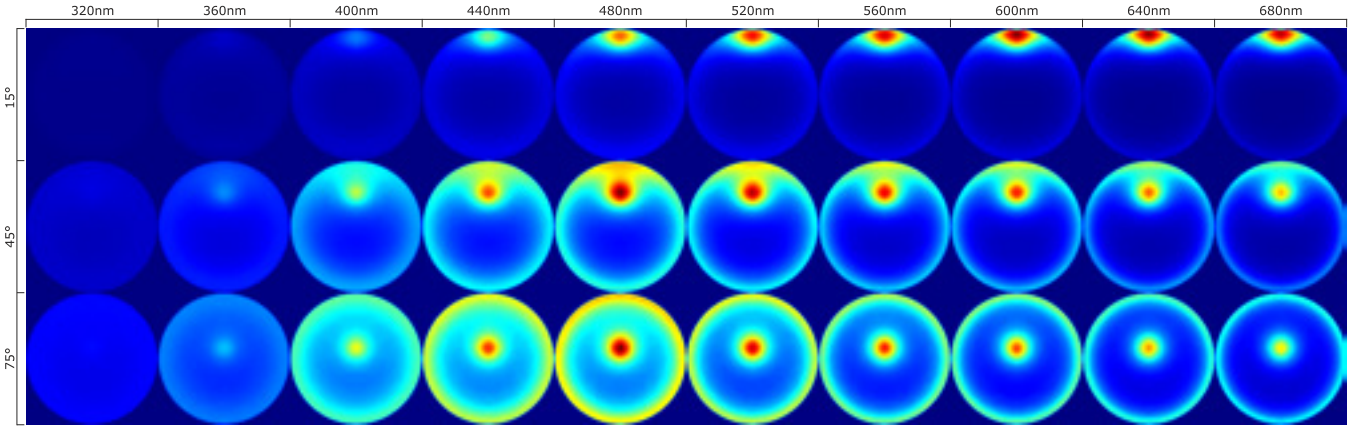

Figure 1: *An alternate version of figure 7 in the paper. In this version, the radiance patterns for each waveband are all scaled to the same global scale for each solar elevation, so that the relative intensity of the wavebands can be seen. This version was not put in the paper because the individually scaled plots do a better job of showing the patterns for each waveband, which we deemed to be more important for the point we wished to make at that particular place in the paper. However, the relative magnitude of the wavebands is only visible in this version.*

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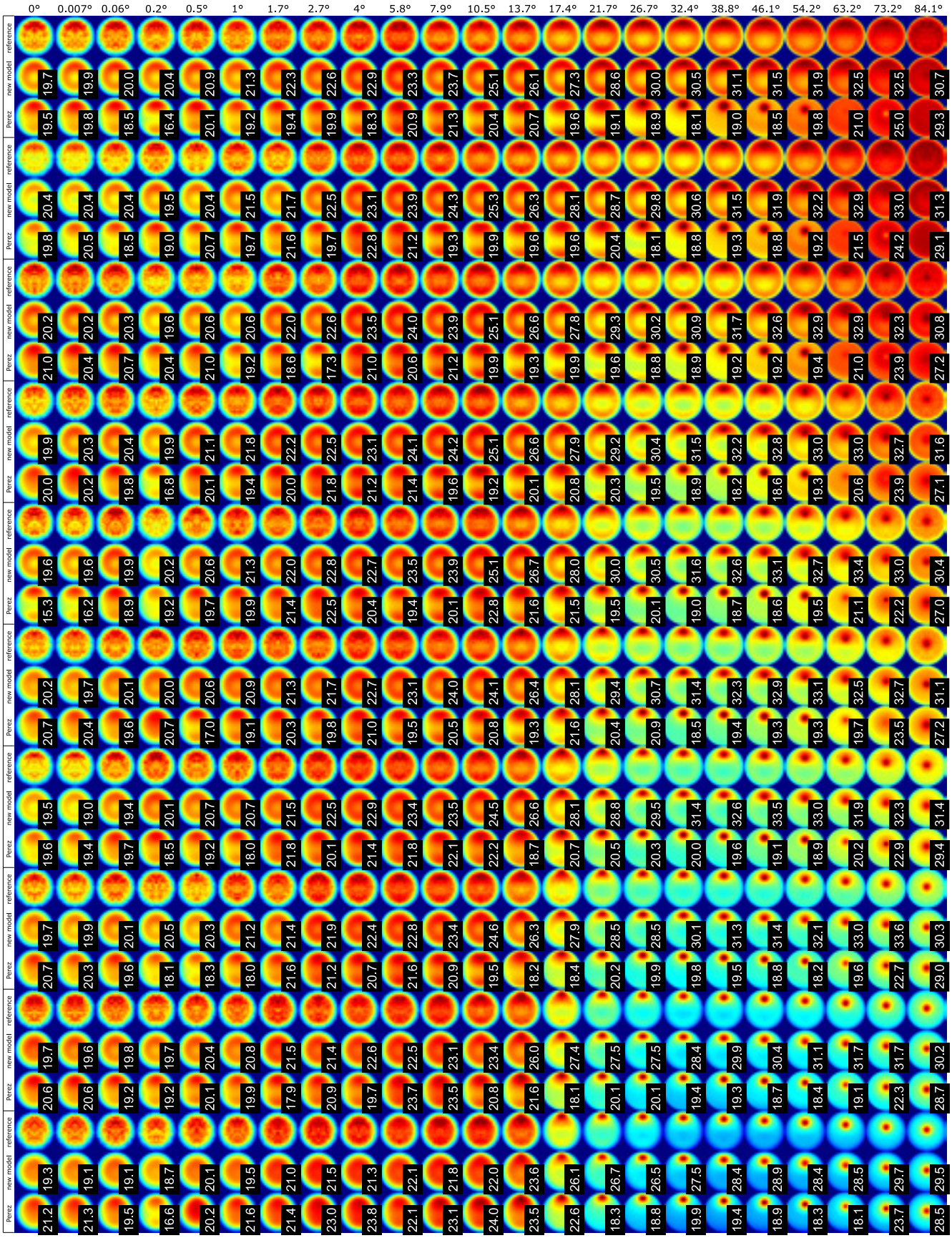

Figure 2: *False colour result charts of the fitting process for* $320nm$*. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output. Note the substantially different scattering patterns compared to the visible range that are in evidence for the ultra-violet part of the spectrum – the properties of Rayleigh scattering lead to UV emission being comparatively uniformly distributed across the sky dome.*

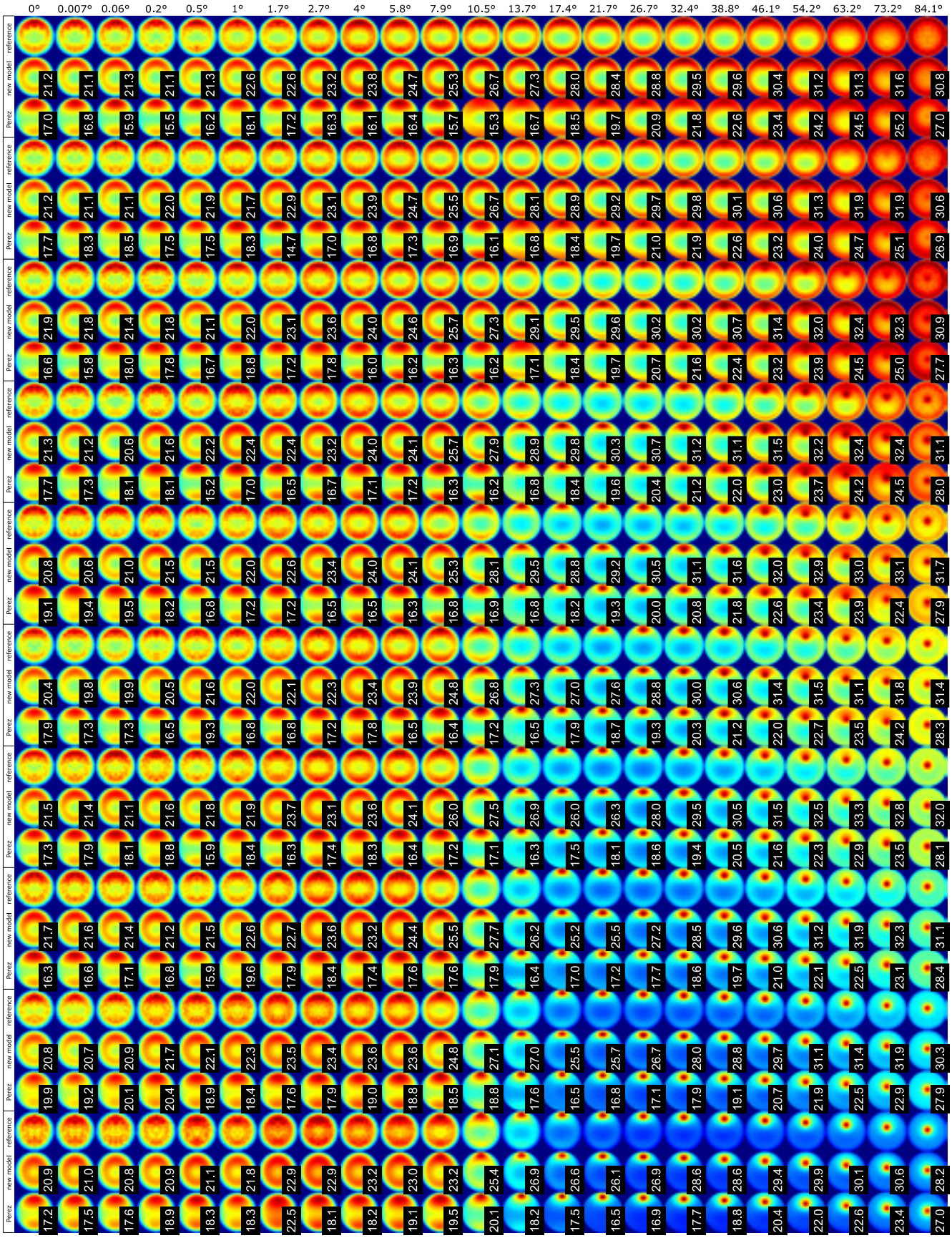

Figure 3: *False colour result charts of the fitting process for* $360nm$*. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

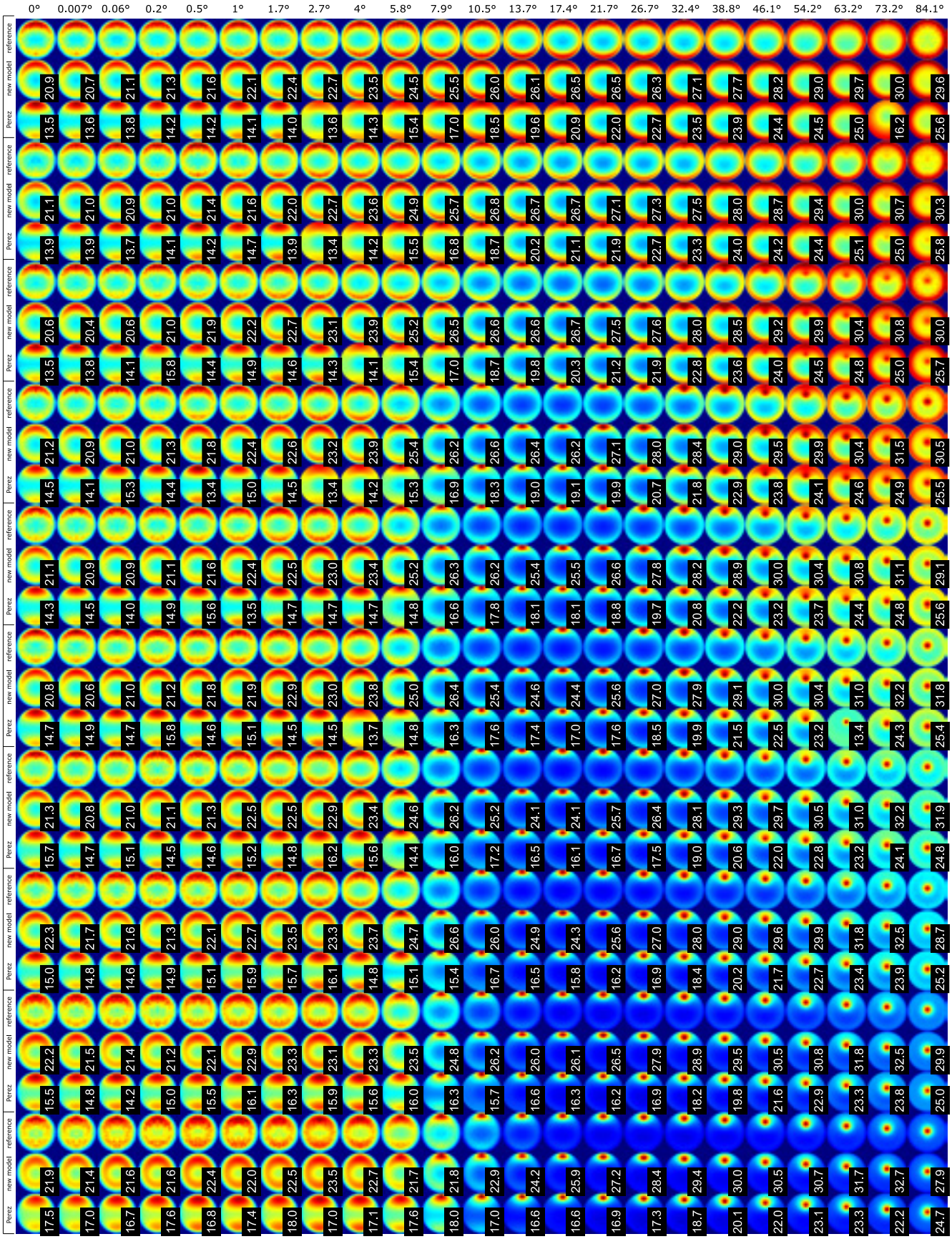

Figure 4: *False colour result charts of the fitting process for* $400nm$*. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

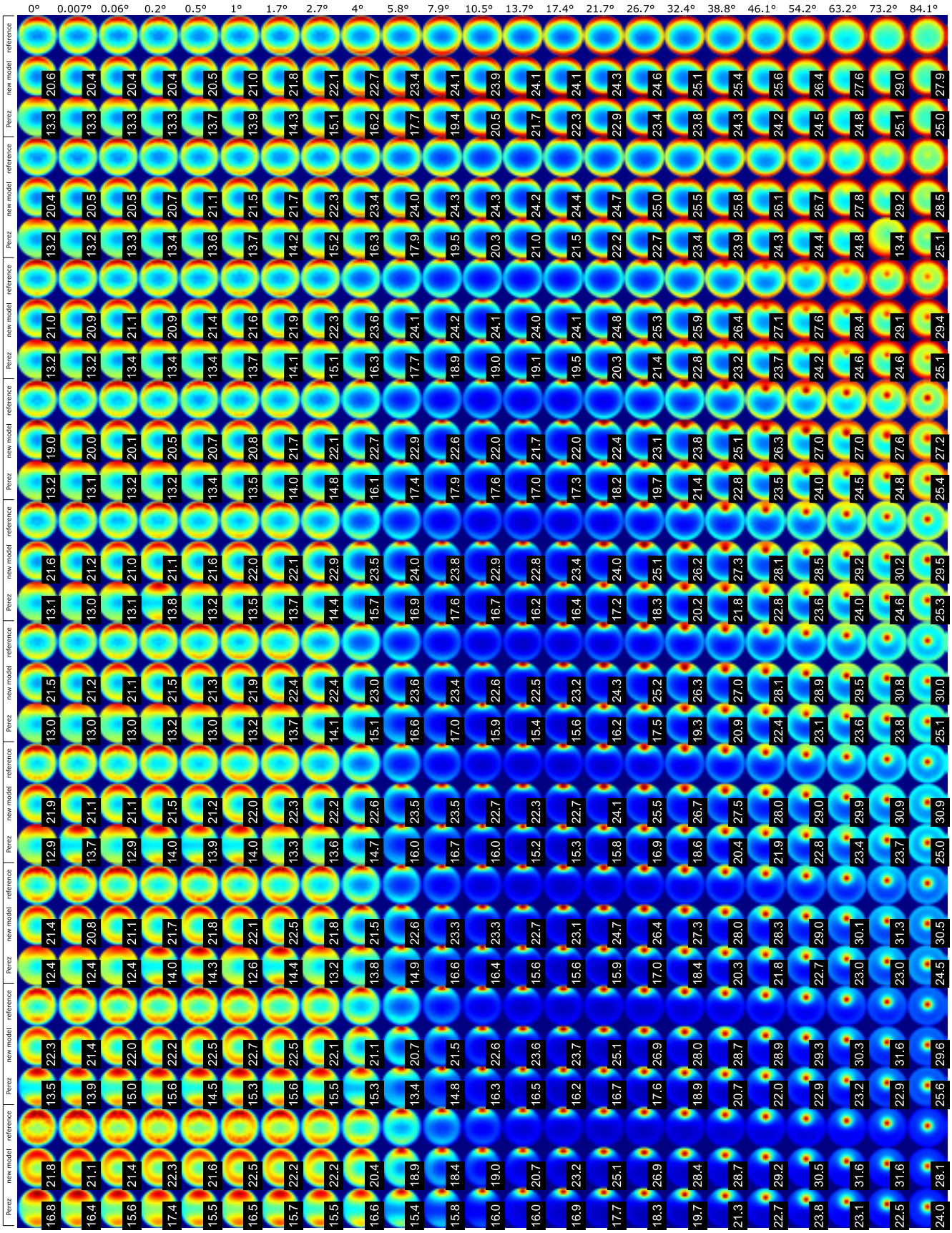

Figure 5: *False colour result charts of the fitting process for* $440nm$*. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

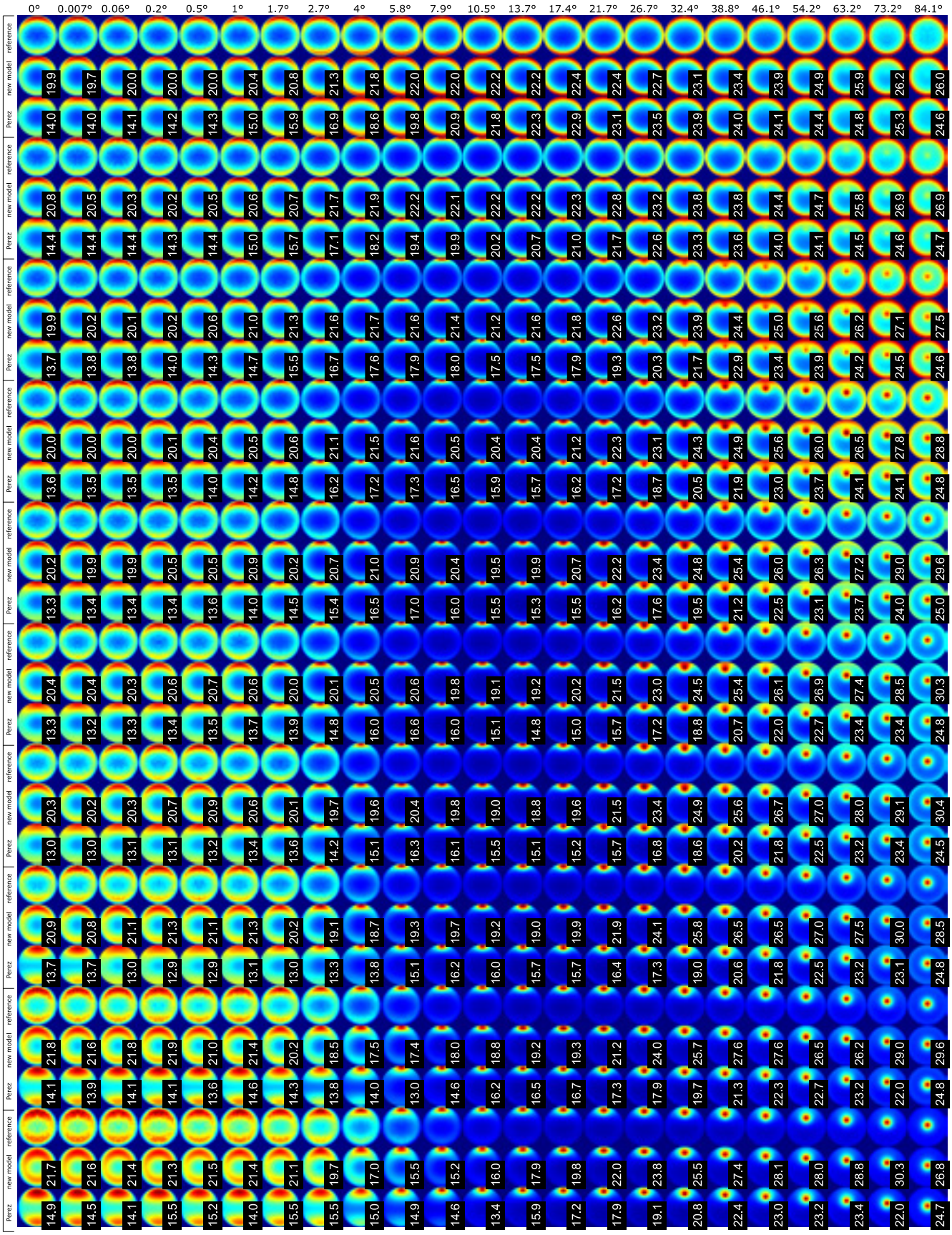

Figure 6: *False colour result charts of the fitting process for* $480nm$*. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

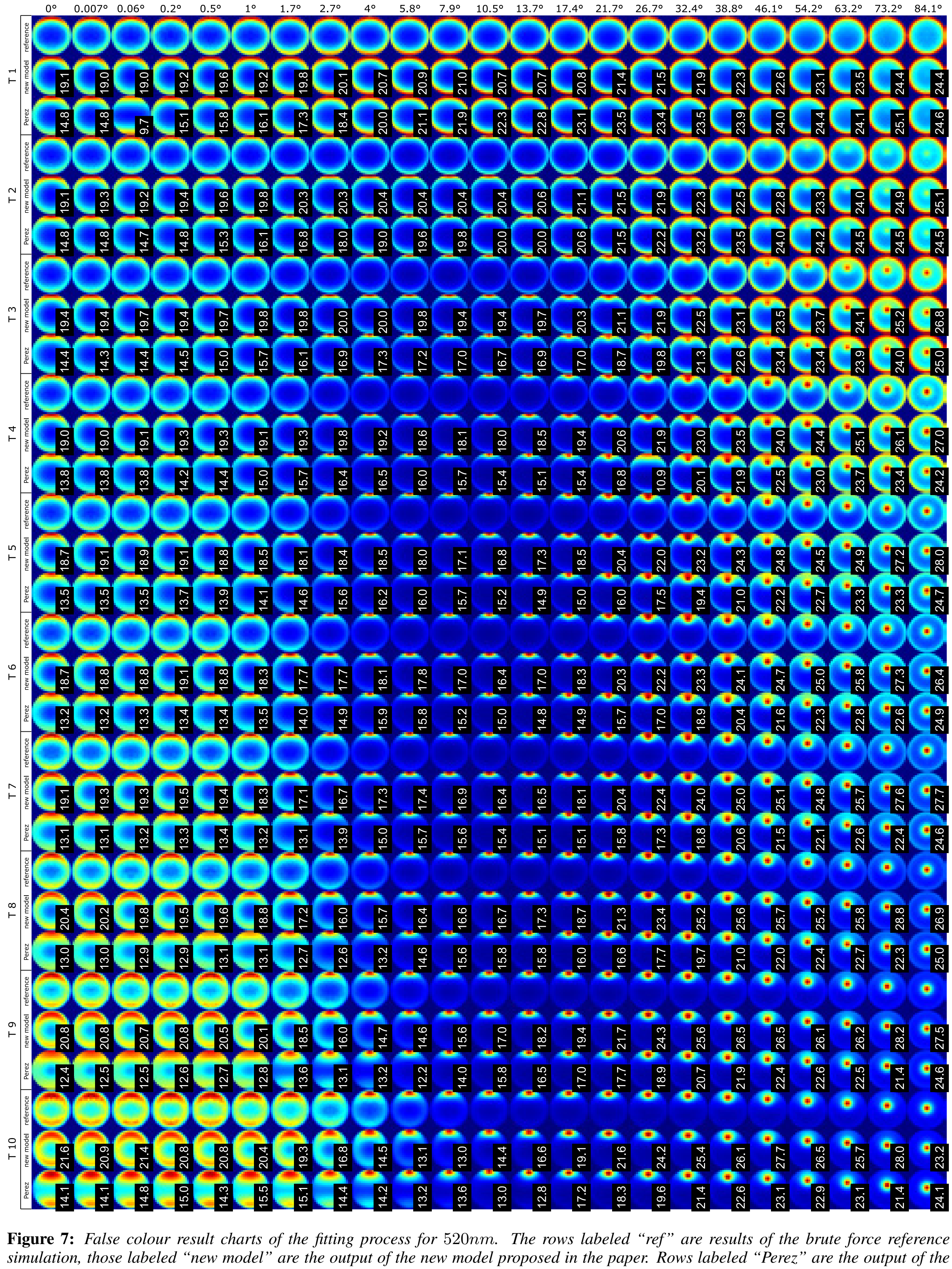

Figure 7: *False colour result charts of the fitting process for* $520nm$*. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

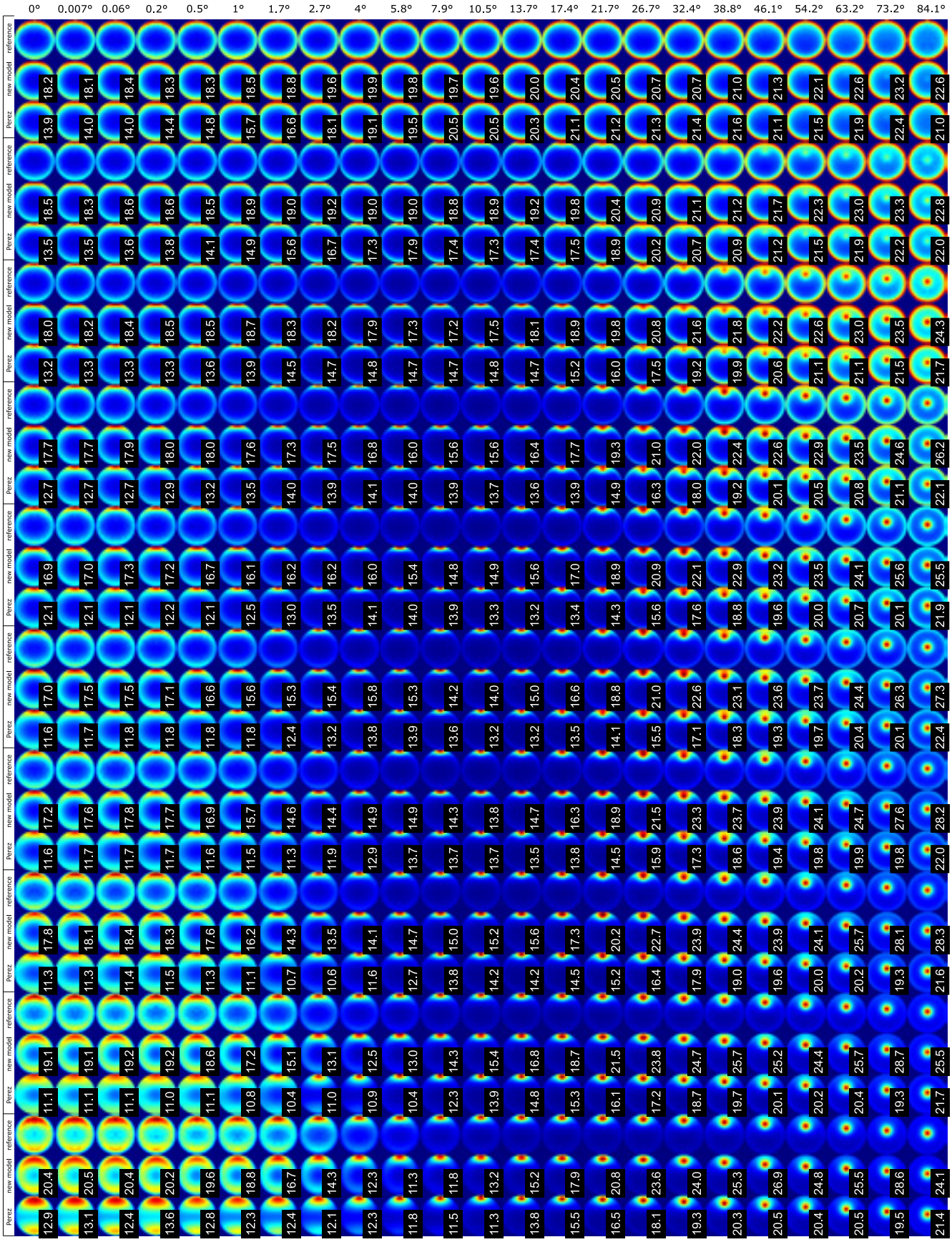

Figure 8: *False colour result charts of the fitting process for* $560nm$*. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

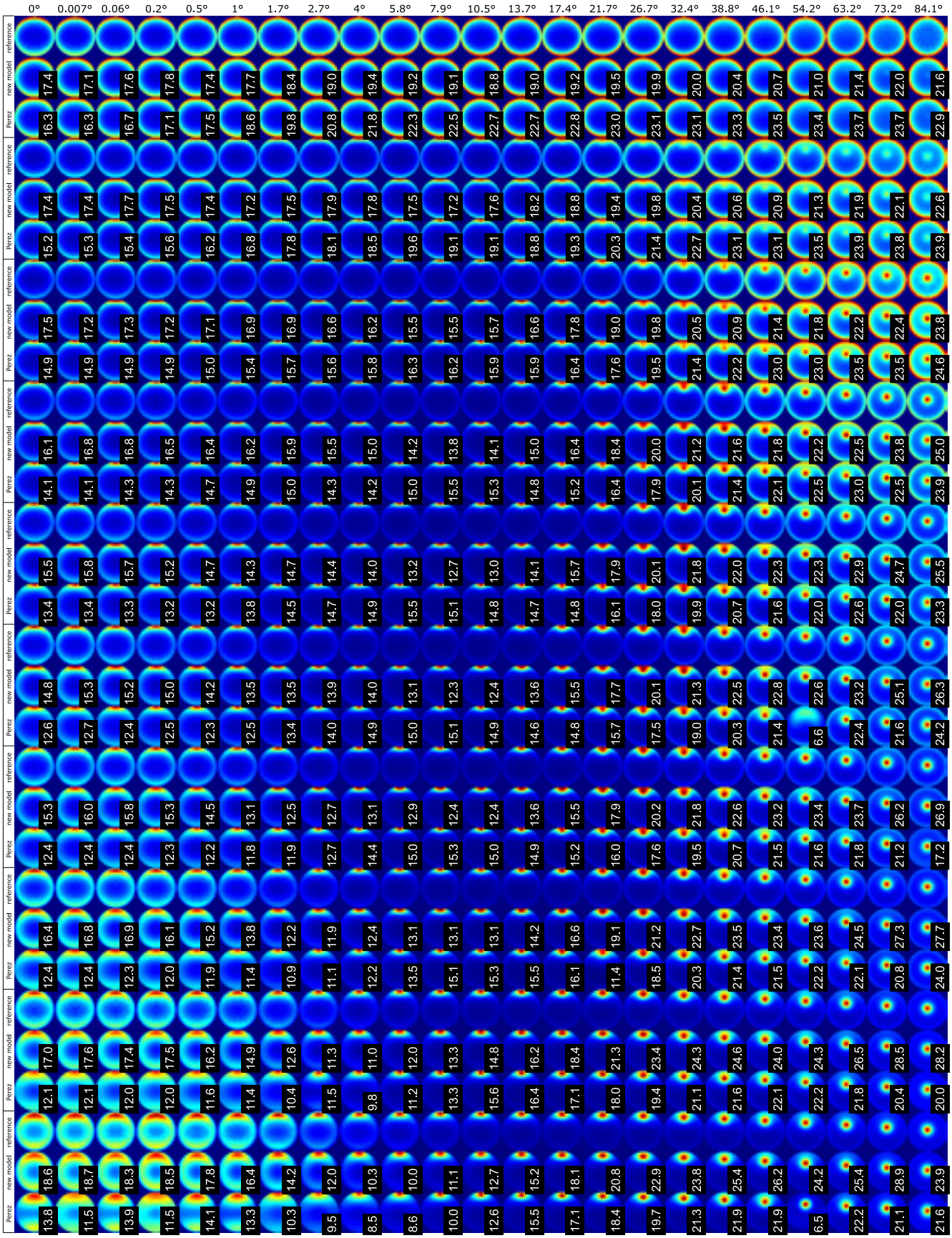

Figure 9: *False colour result charts of the fitting process for* $600nm$*. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

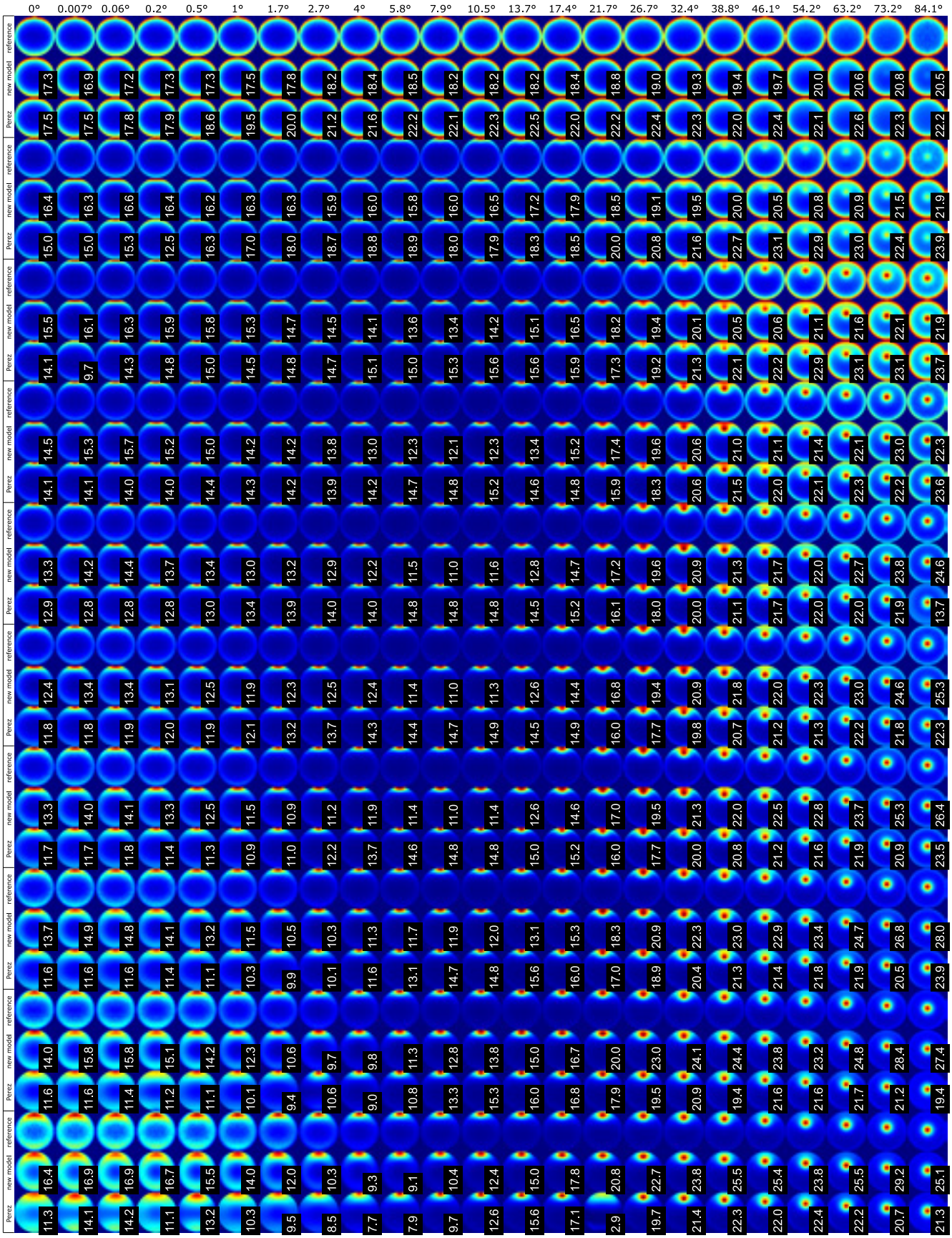

Figure 10: *False colour result charts of the fitting process for* $640nm$*. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

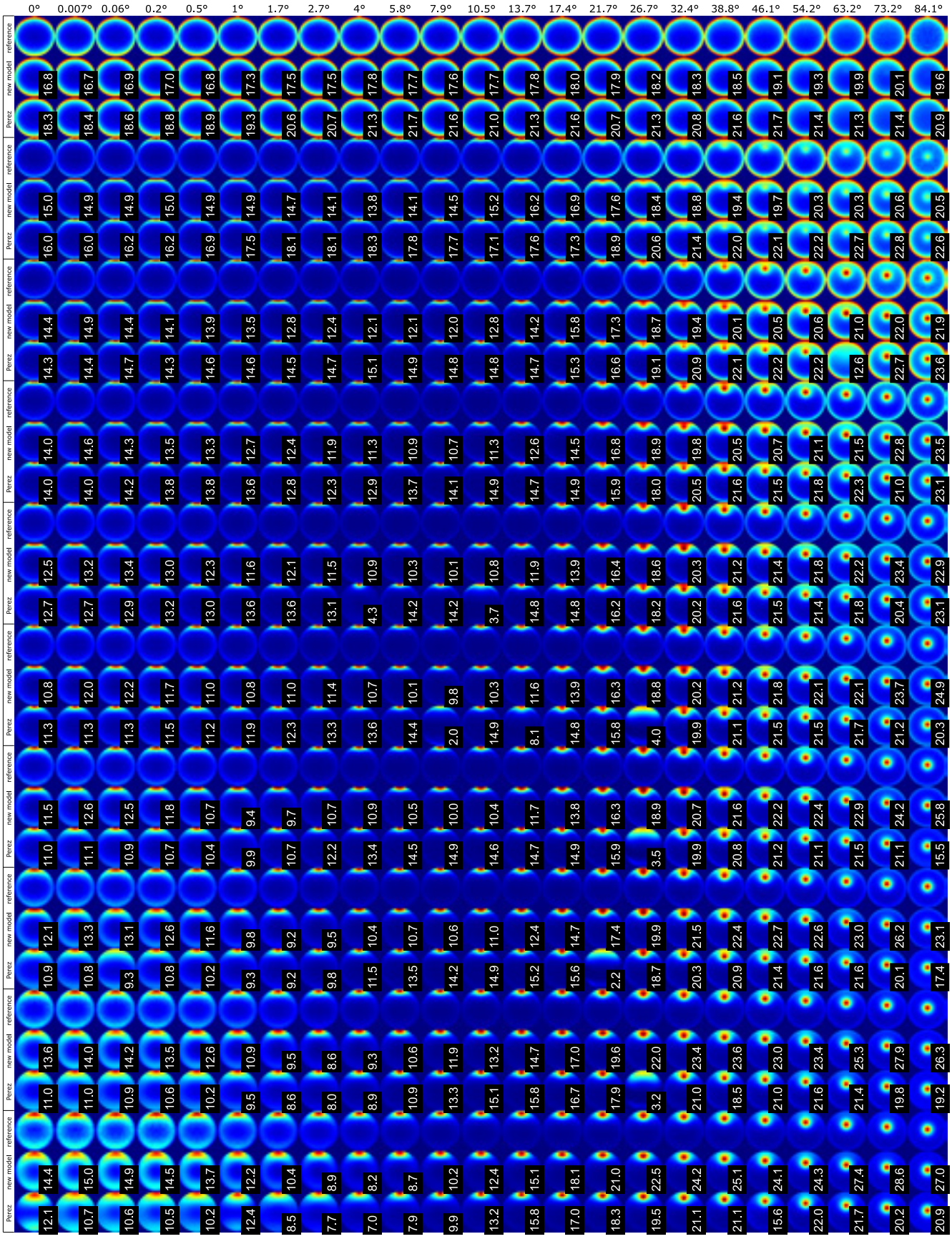

Figure 11: *False colour result charts of the fitting process for* $680nm$*. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

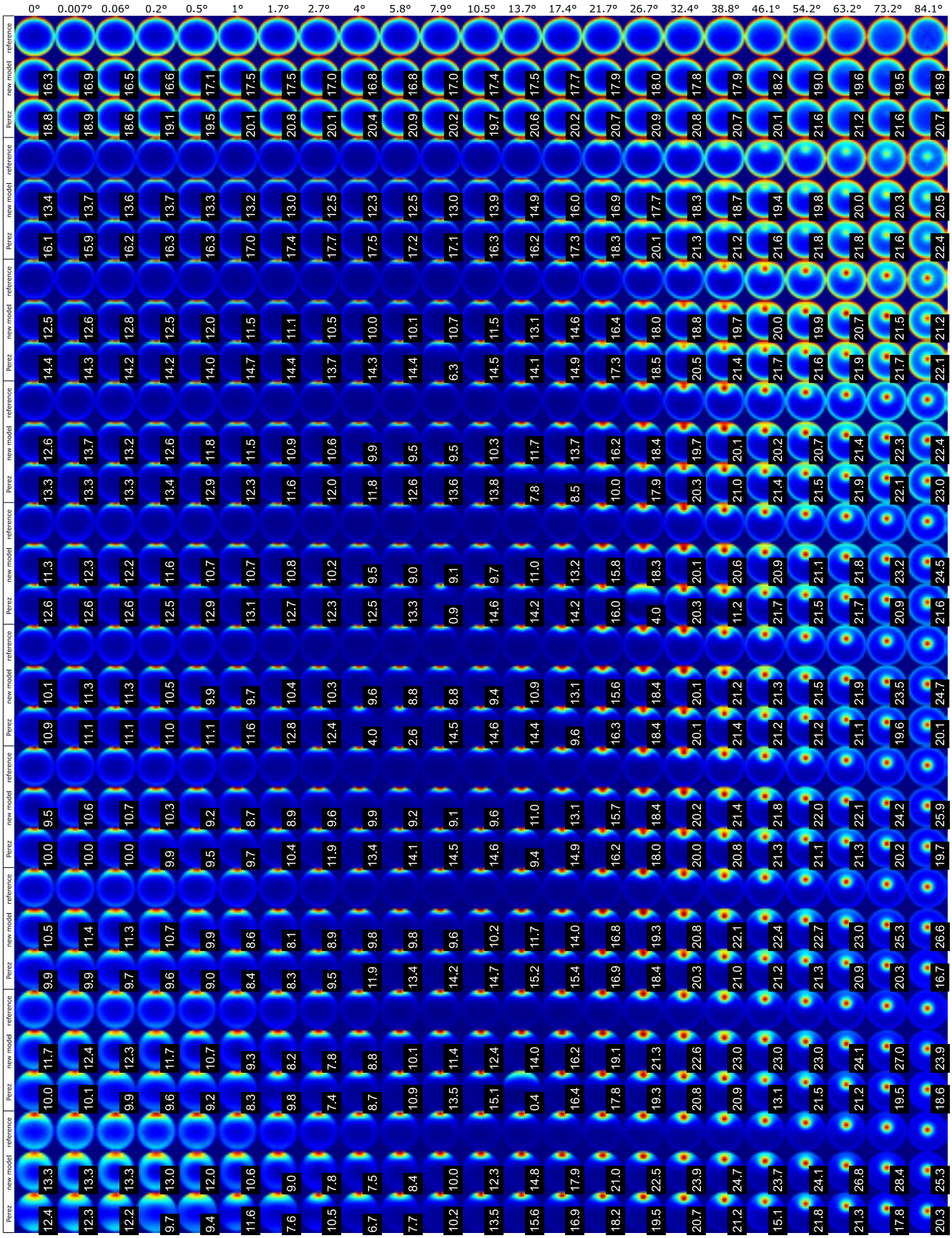

Figure 12: *False colour result charts of the fitting process for* $720nm$*. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

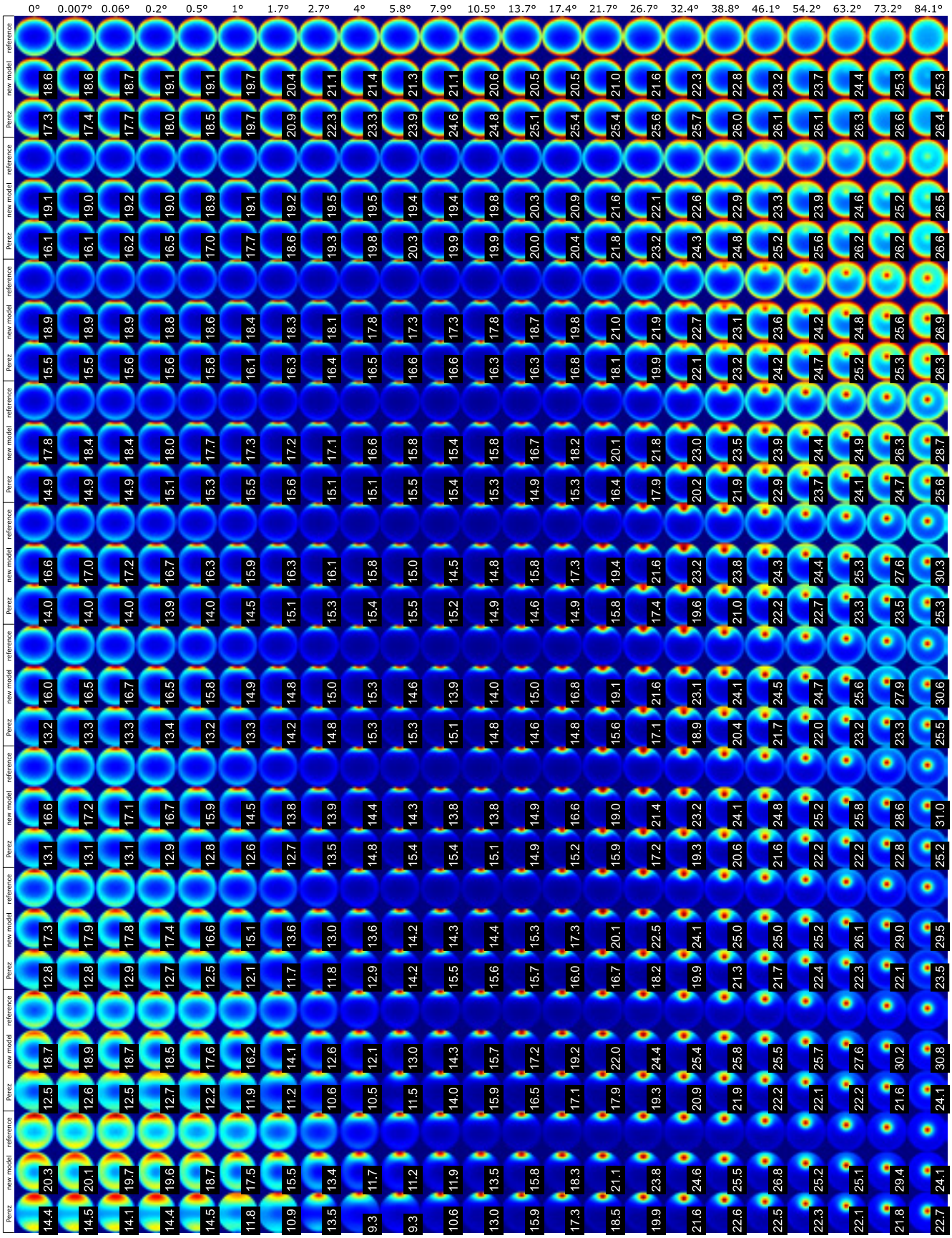

Figure 13: *False colour result charts of the fitting process for the X channel of the XYZ model. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation. T indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

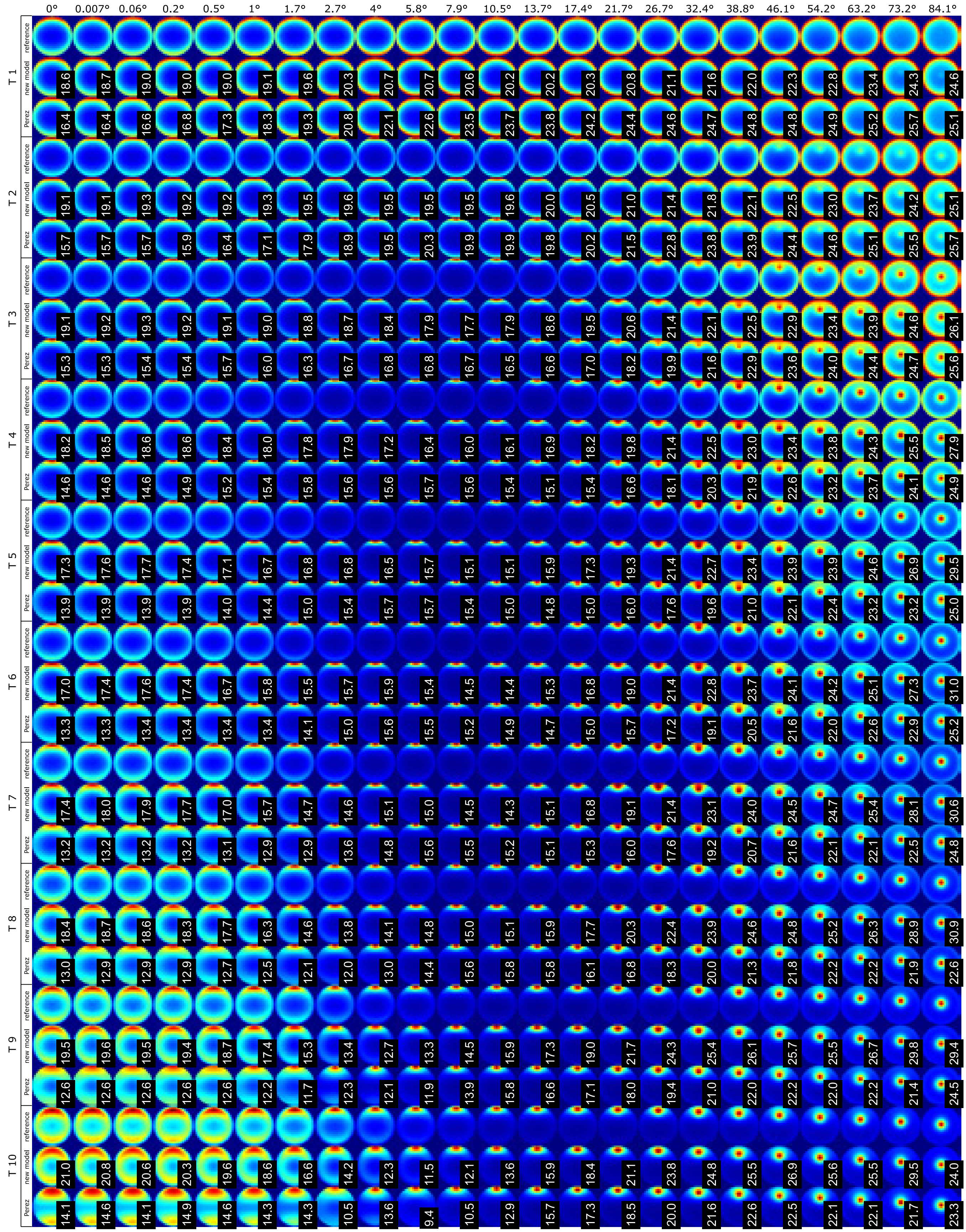

Figure 14: *False colour result charts of the fitting process for the Y channel of the XYZ model. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation.* T *indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

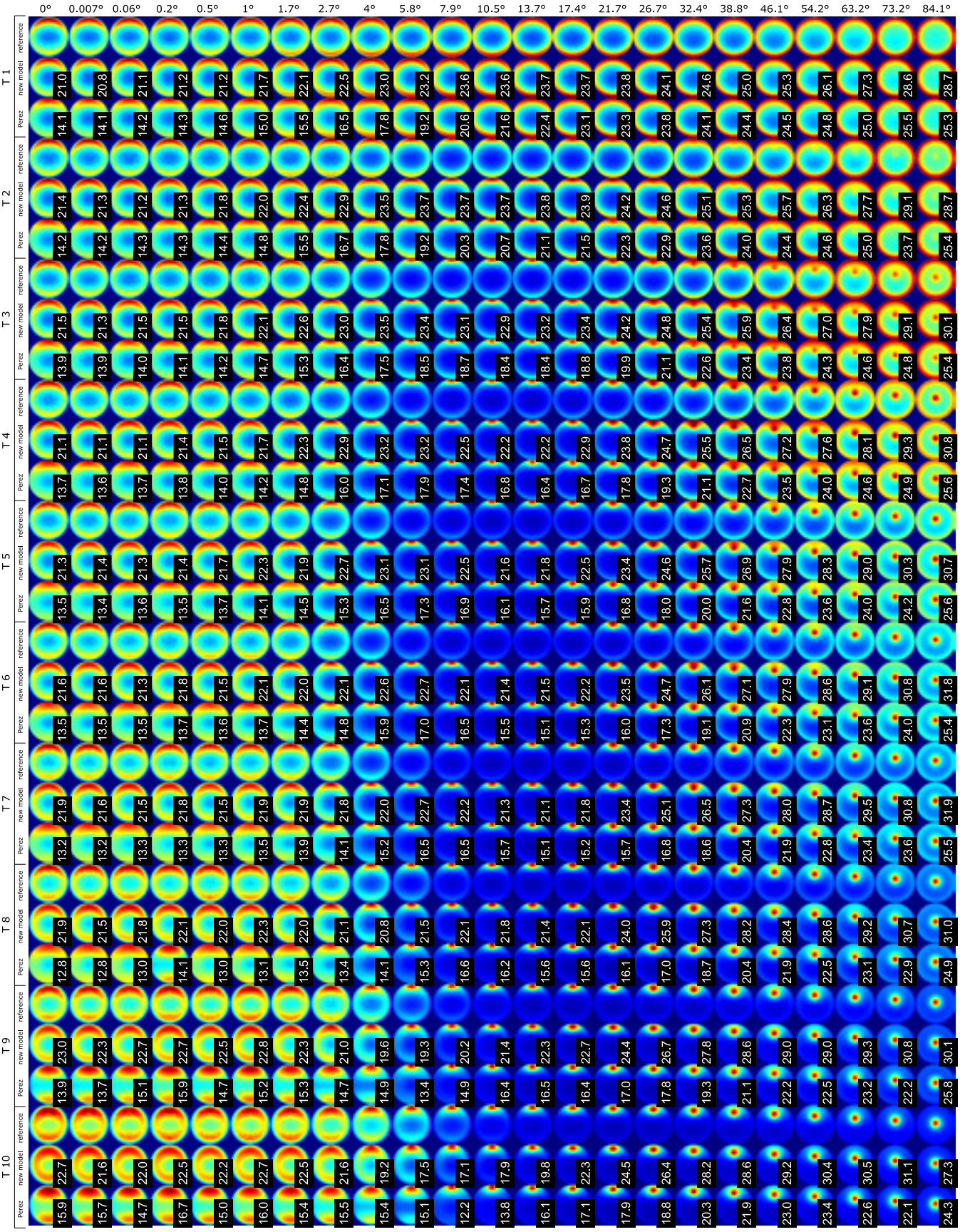

Figure 15: *False colour result charts of the fitting process for the Z channel of the XYZ model. The rows labeled "ref" are results of the brute force reference simulation, those labeled "new model" are the output of the new model proposed in the paper. Rows labeled "Perez" are the output of the original Perez formula, with distribution parameters fitted specifically separately for each combination of turbidity/elevation. T indicates the turbidity value. Logarithmic SNR measurements are shown for each model output.*

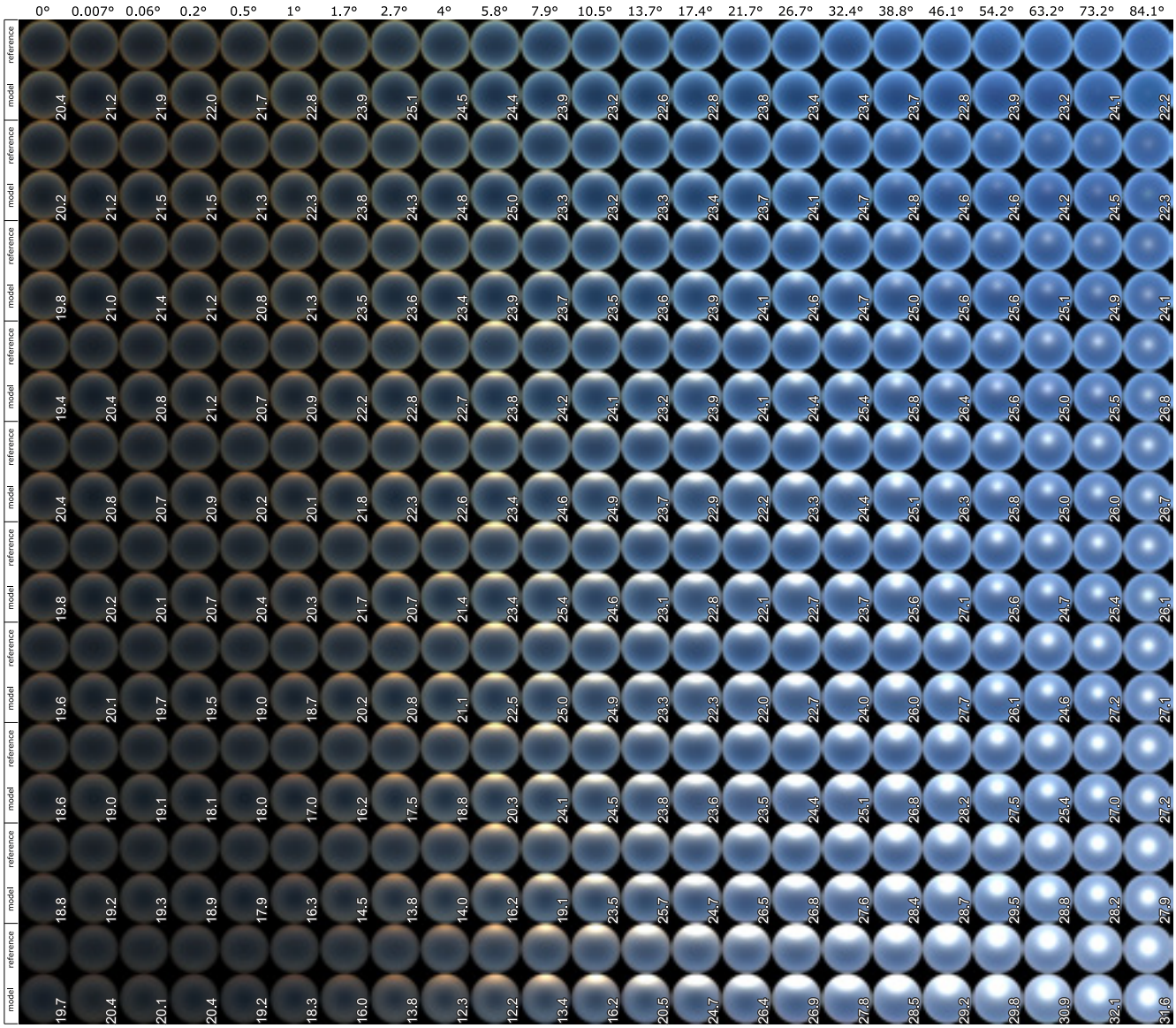

Figure 16: *Outputs of the brute force path tracer, converted to sRGB compared to outputs of the new spectral model.Logarithmic SNR measurements in $L^*a^*b^*$ are shown for each model output.*