Supporting Information

For

"Evolution of 21st Century Sea-level Rise Projections"

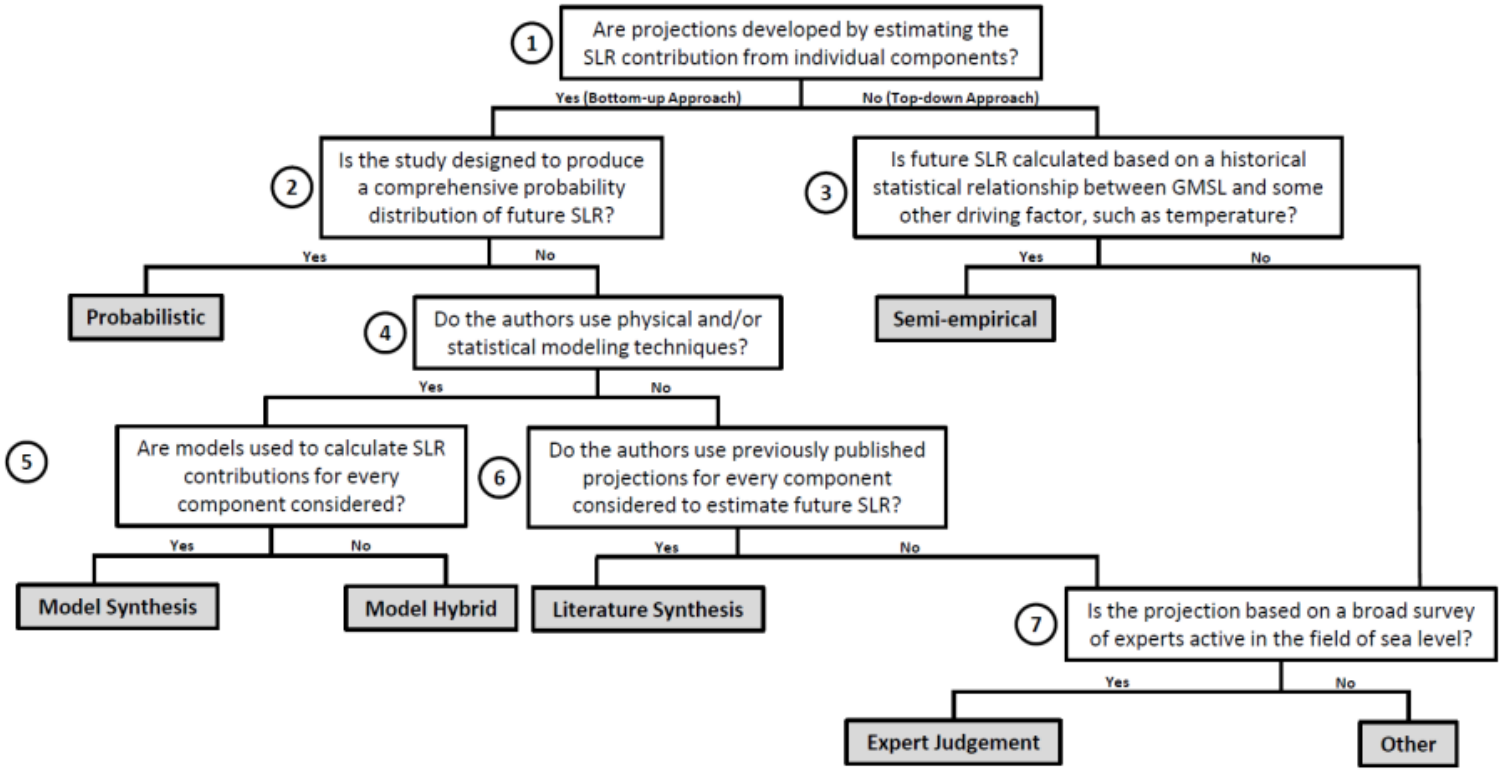

Figure S1: Decision tree showing the decision rules used to classify individual studies into 7 different methodology categories described in the database: Probabilistic, Semi-empirical, Model Synthesis, Model Hybrid, Literature Synthesis, Expert Judgement, and Other. Not included on this decision tree are projections for the IPCC category, classified as projections produced from IPCC reports.

Table S2 | Categorization of IPCC emission scenarios for the SLR database

Emissions Scenario Category	Scenario	Approximate 2100 Temperature (relative to Pre-industrial)
High	IPCC BAU	4.3 °C[†]
	IS92e	3.8 °C[‡]
	SRES A2	4.2 °C[§]
	SRES A1FI	5.0 °C[§]
	RCP8.5	4.9 °C[§]
Mid	IPCC B	3.0 °C[†]
	IPCC C	2.4 °C[†]
	IS92f	3.5 °C[‡]
	IS92a	3.0 °C[‡]
	IS92b	2.9 °C[‡]
	SRES B1	2.5 °C[§]
	SRES A1T	3.0 °C[§]
	SRES B2	3.0 °C[§]
	SRES A1B	3.5 °C[§]
	RCP4.5	2.4 °C[§]
	RCP6.0	3.0 °C[§]
Low	IPCC D	2.0 °C[†]
	IS92d	2.2 °C[‡]
	IS92c	1.9 °C[‡]
	RCP2.6	1.5 °C[§]

[†] Based on values from IPCC FAR (Warrick & Oerlemans, 1990)

[‡] Based on values from IPCC SAR (Warrick et al., 1996), with values adjusted to be relative to pre-industrial by adding 0.61 °C (Hartmann et al., 2013)

[§] Based on median values presented in Table 2 of Rogelj et al. (2012).

Table S3 | Projected Ranges of SLR from IPCC Reports

IPCC Report	2100 SLR Range	Source*	End Years	Definition†
FAR	0.34 - 0.66 m	FAR Figures 9.6 and 9.7	2100	"Best estimate" range across scenarios
	0.31 - 1.10 m	FAR Figure 9.6	2100	Range for the Policy Scenario Business-as-Usual
	0.16 - 1.10 m‡	FAR Figures 9.6 and 9.7	2100	Extreme range of all 4 scenarios
SAR	0.38 - 0.55 m	SAR Summary for Chapter 7	2100	Range of Emission Scenarios IS92a-f using "best estimate" model parameters
	0.20 - 0.86 m	SAR Summary for Chapter 7	2100	Uncertainty range for scenario IS92a
	0.13 - 0.94 m‡	SAR Summary for Chapter 7	2100	Extreme range of projections, taking into account both emission scenarios and model uncertainties
TAR	0.09 - 0.88 m‡	TAR Executive Summary from Chapter 11	2100	Range of all AOGCMs and SRES scenarios
	0.11 - 0.77 m	TAR Executive Summary from Chapter 11	2100	Range of AOGCMs following the IS92a scenario
AR4	0.18 - 0.59 m‡	AR4 Executive Summary from Chapter 10	2090-2099	Span of the 5-95% range across various SRES scenarios§
AR5	0.26 - 0.82 m‡	AR5 Executive Summary from Chapter 13	2081-2100	'likely' (17th – 83rd percentile) sea-level rise, based on process-based models for all scenarios**
	0.52 - 0.98 m	AR5 Executive Summary from Chapter 13	2100	'likely' range (17th – 83rd percentile) from process-based models for RCP8.5

* Source from within the IPCC report for the range given
† Definition of range from the IPCC report
‡ Ranges used in discussion of the SLR database
§ As noted in AR4, these values do not include dynamic ice sheet contributions.
** Note that the AR5 report indicates that there is a possibility for an additional contribution to these values of up to several tenths of a meter in the event that the collapse of the marine-based sectors of the Antarctic ice sheet is initiated.

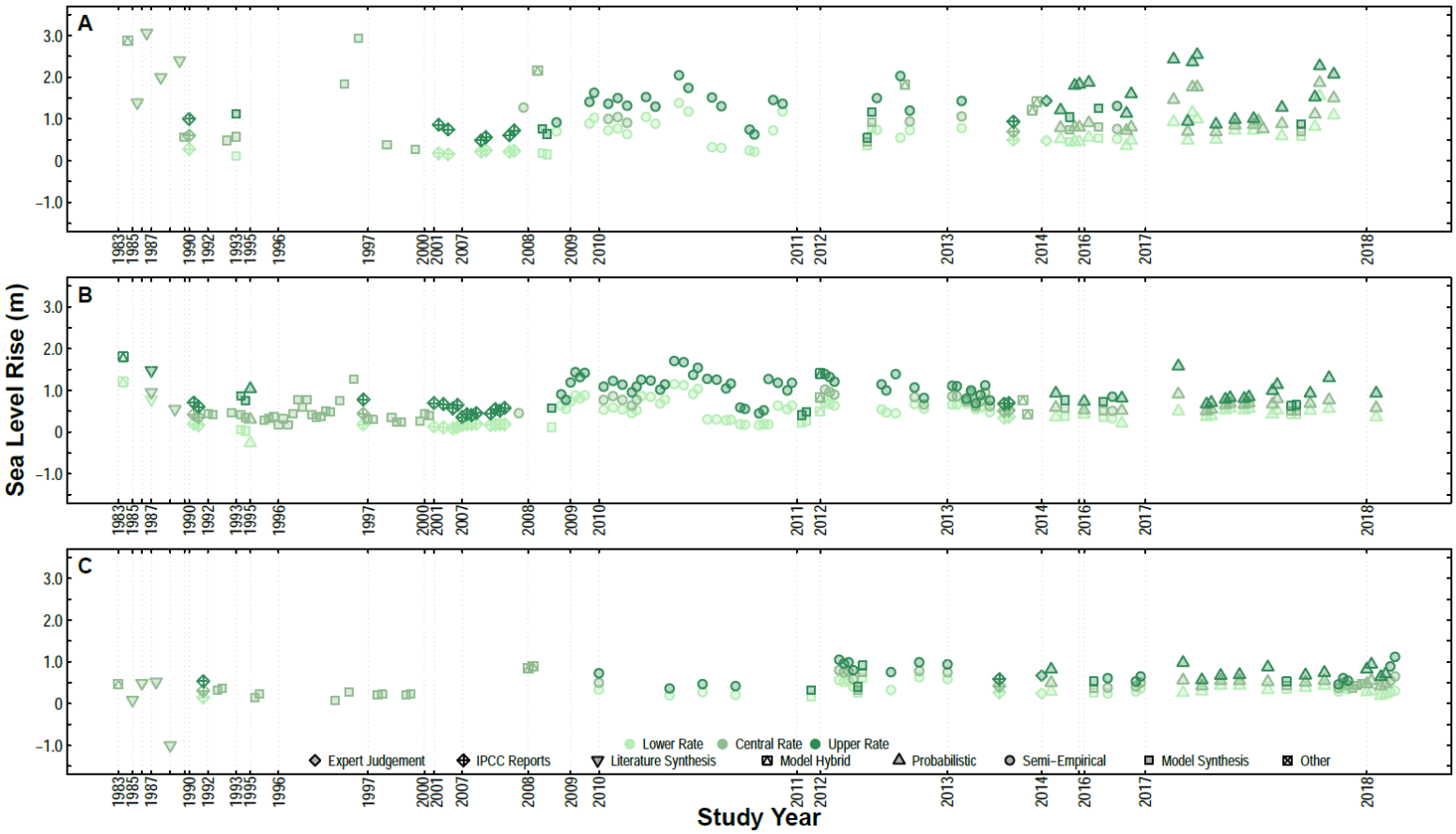

Figure S2: Evolution of lower, central, and upper SLR projections from 1983 – 2018. Results are shown for (a) high emissions scenarios, (b) middle emissions scenarios, and (c) low emissions scenarios. Note that time steps are non-uniform, in order to clearly show all projections.

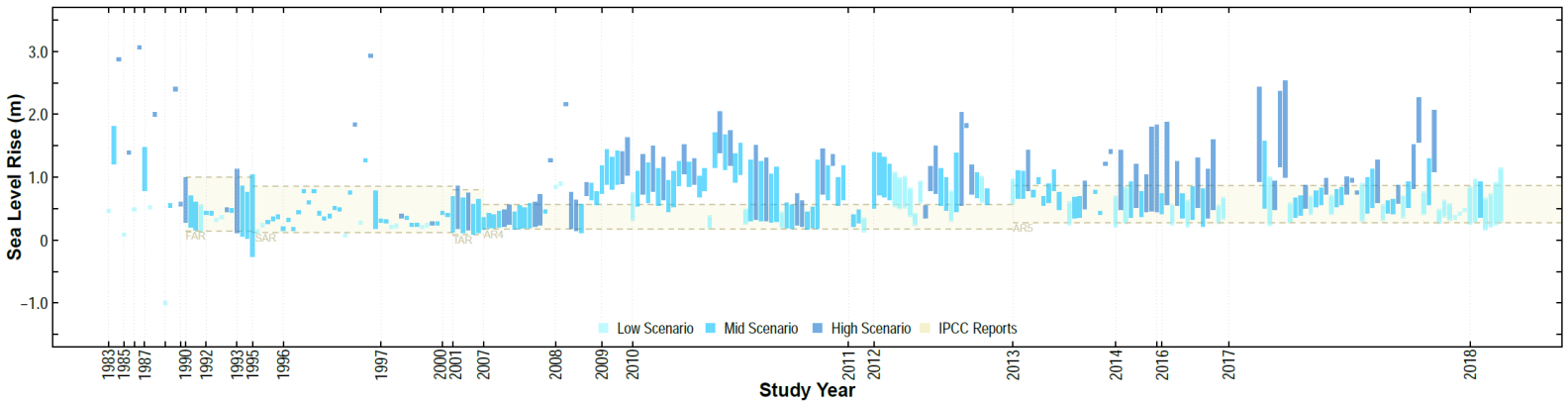

Figure S3: Evolution of the ranges of SLR projections throughout time. Length of bars represents the range of each projection made for low emissions scenarios, middle emissions scenarios, and high emissions scenarios. Where possible, bars show the 5^{th} – 95^{th} percentile range of individual projections from low, middle, and high emissions scenarios. Ranges for IPCC reports (yellow) are as shown in Table S3: the extreme range of projections for IPCC FAR and SAR, the range of all AOGCMs and SRES scenarios for TAR, the 5-95% range across SRES scenarios for AR4 (which do not include dynamic ice sheet response), and the 'likely' (17^{th} – 83^{rd} percentile) range from process-based models for AR5 (potential rise above this range as specified in AR5 is not included in the shaded region). Note that time steps are non-uniform, in order to clearly show all projections, and projections have been normalized using Eq. [1] as specified in Section 2.1.

Table S4 | Median, Likely, and 5th – 95th percentiles of Global Mean Sea Level for Studies Shown in Fig. 5*

Study	RCP	2050 5th - 95th Percentile Range (m/50 yrs)	2050 17th - 83rd Percentile Range (m/50 yrs)	2050 50th Percentile (m/50 yrs)	2100 5th - 95th Percentile Range (m/century)	2100 17th - 83rd Percentile Range (m/century)	2100 50th Percentile (m/century)
Jevrejeva et al., 2012	RCP3PD	0.20 - 0.38	--	0.27	0.33 - 0.75	--	0.52
	RCP4.5	0.21 - 0.41	--	0.29	0.47 - 1.00	--	0.67
	RCP8.5	0.24 - 0.46	--	0.33	0.74 - 1.50	--	1.00
Schaeffer et al., 2012	RCP3PD	--	--	--	0.52 - 0.96	--	0.75
	RCP4.5	--	--	--	0.64 - 1.21	--	0.90
	RCP8.5	--	--	--	0.72 - 1.39	--	1.02
Perette et al., 2013	RCP3PD	--	0.23 - 0.32	0.28	--	0.59 - 0.94	0.75
	RCP4.5	--	0.23 - 0.32	0.28	--	0.66 - 1.11	0.86
	RCP8.5	--	0.23 - 0.34	0.28	--	0.78 - 1.43	1.06
Slangen et al., 2014	RCP4.5	--	--	--	--	0.37 - 0.77	0.57
	RCP8.5	--	--	--	--	0.45 - 1.04	0.75
Kopp et al., 2014	RCP2.6	0.18 - 0.33	0.21 - 0.29	0.25	0.29 - 0.82	0.37 - 0.65	0.50
	RCP4.5	0.18 - 0.35	0.21 - 0.31	0.26	0.36 - 0.93	0.45 - 0.77	0.59
	RCP8.5	0.21 - 0.38	0.24 - 0.34	0.29	0.52 - 1.21	0.62 - 1.00	0.79
Jevrejeva et al., 2014	RCP8.5	--	--	--	0.46 – 1.80	--	0.80
Grinsted et al., 2015	RCP8.5	--	--	--	0.45 - 1.83	0.58 - 1.2	0.80
Jackson and Jevrejeva, 2016	RCP4.5	--	--	--	0.21 - 0.81	0.34 - 0.69	0.52
	RCP8.5	--	--	--	0.35 - 1.13	0.52 - 0.94	0.72
	"High End"	0.17 - 0.44	0.20 - 0.34	0.27	0.49 - 1.60	0.60 - 1.16	0.80
Kopp et al., 2016	RCP2.6	--	--	--	0.24 - 0.61	0.28 - 0.51	0.38
	RCP4.5	--	--	--	0.33 - 0.85	0.39 - 0.69	0.51
	RCP8.5	--	--	--	0.52 - 1.31	0.59 - 1.05	0.76
Mengel et al., 2016	RCP2.6	0.12 - 0.21	--	0.17	0.27 - 0.53	--	0.38
	RCP4.5	0.13 - 0.22	--	0.17	0.35 - 0.74	--	0.51
	RCP8.5	0.14 - 0.26	--	0.19	0.55 - 1.26	--	0.81
Kopp et al., 2017	RCP2.6	0.12 - 0.41	0.16 - 0.33	0.23	0.26 - 0.98	0.37 - 0.78	0.56
	RCP4.5	0.14 - 0.43	0.18 - 0.36	0.26	0.50 - 1.58	0.66 - 1.25	0.91
	RCP8.5	0.17 - 0.48	0.22 - 0.40	0.31	0.93 - 2.43	1.09 - 2.09	1.46
Nauels et al., 2017a	RCP2.6	--	0.17 - 0.27	0.22	--	0.34 - 0.54	0.43
	RCP4.5	--	0.19 - 0.28	0.23	--	0.43 - 0.63	0.52
	RCP8.5	--	0.20 - 0.30	0.25	--	0.58 - 0.87	0.71
Nauels et al., 2017b	RCP2.6	--	0.14 - 0.29	0.20	--	0.33 - 0.71	0.49
	RCP4.5	--	--	--	--	0.43 - 0.99	0.67
	RCP8.5	--	0.18 - 0.33	0.25	--	0.59 - 1.27	0.88
Bakker et al., 2017	RCP2.6	0.17 - 0.29	--	0.18	0.38 - 0.68	--	0.51
	RCP4.5	0.19 - 0.31	--	0.21	0.52 - 0.93	--	0.68
	RCP8.5	0.21 - 0.34	--	0.23	0.81 - 1.52	--	1.11
Wong et al., 2017	RCP2.6	0.20 - 0.33	--	0.26	0.43 - 0.74	--	0.55
	RCP4.5	0.22 - 0.35	--	0.28	0.56 - 1.30	--	0.77
	RCP8.5	0.25 - 0.40	--	0.30	1.09 - 2.07	--	1.50

*Note: Projections plotted in Fig. 5 include additional quantiles where available

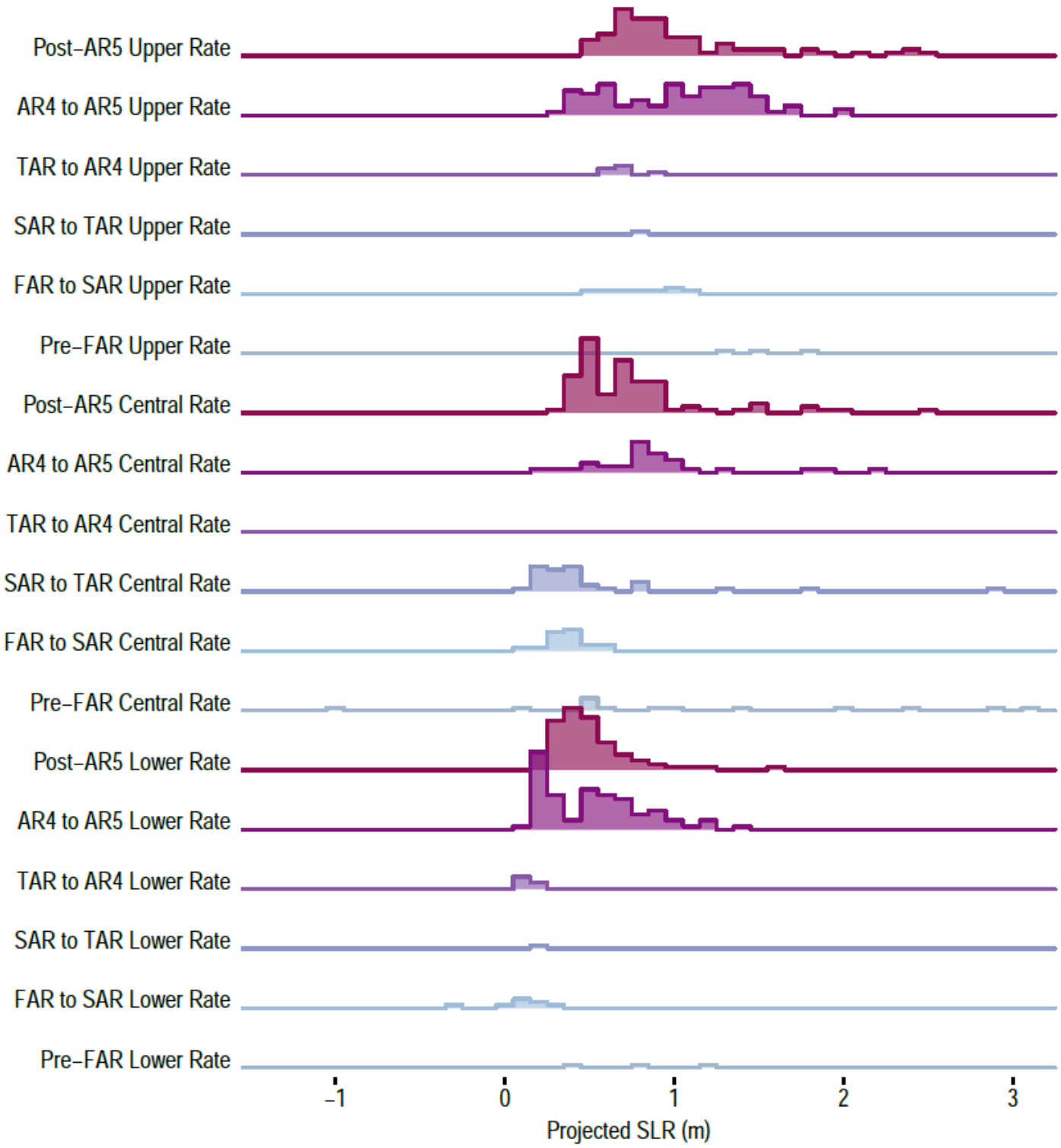

Figure S4: Density time series of lower, central, and upper SLR projections. Results are shown for projections made in the time prior to FAR, in the time from FAR to SAR, from SAR to TAR, from TAR to AR4, from AR4 to AR5, and since AR5. Where possible, the 5th, 50th, and 95th percentile estimates from the original studies are used as lower, central, and upper estimates for each projection included in the time series (see Table S1 and Section 2 for further information about definitions of lower, central, and upper rates).