Supplementary material

Sea-level scenarios aligned with the 3rd adaptation plan in France

Scénarios d'élévation du niveau de la mer alignés sur le 3e plan d'adaptation en France

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Supplementary Material 1: Climate and emulated ice-melt projections used in this study

Table SM-1.1 data used in this study to produce sea-level scenarios consistent with the French Climate Scenarios (TRACC), as well as the repository from which data can be accessed.

Sea-level component	Method and references	Access to data (accessed June 2024)
Sterodynamic	Ocean thermal expansion and dynamic effects from the CMIP6 projections and emulators (Fox-Kemper et al., 2021)	https://zenodo.org/records/6382554
Glaciers	Statistical emulation of GlacierMIP* simulations (Edwards et al., 2021; Marzeion et al., 2020)	*Emulandice* : https://github.com/tamsinedwards/emulandice
Greenland	Statistical emulation of ISMIP6* simulations (Edwards et al., 2021; Goelzer et al., 2020)	*Emulandice* : https://github.com/tamsinedwards/emulandice
Antarctica	• Statistical emulation of ISMIP6* simulations (Edwards et al., 2021; Seroussi et al., 2020) • LARMIP-2* simulations (Levermann et al., 2020) • Antarctica simulations including Marine Ice-Cliff instabilities(DeConto et al., 2021)	• *Emulandice* : https://github.com/tamsinedwards/emulandice • https://github.com/ALevermann/larmip2020 • https://www.nature.com/articles/s41586-021-03427-0#Sec23
Land water	Projections of land water contributions used in AR6 (Fox-Kemper et al., 2021)	https://zenodo.org/records/6382554

Glacial isostatic adjustment (GIA)	GIA model results (Caron et al., 2018)	https://zenodo.org/records/3485577
Fingerprints (used for the regionalisation, see subsection 2.2.4)	Fingerprints used in the AR6 (Fox-Kemper et al., 2021)	https://zenodo.org/records/6382554

*projections available until 2100.

Supplementary Material 2: Methods used to model uncertainties after 2100.

ISMIP6 and LARMIP-2 model results are delivered to 2100 only. We deliver projections to 2120 by using a quadratic extrapolation calibrated over 2016-2100, that is, the entire simulation period. For GlacierMIP and ISMIP6 projections emulated using Emulandice, applying this simple quadratic extrapolation leads to reducing the uncertainties after 2100. This artefact is spurious and we correct it by modelling the residuals considering they follow a Gaussian random process with heteroscedasticity (i.e. an increase in the variance of the residuals with time). In fact, this behavior is consistent to that of the Emulandice simulations, and taking it into account allows to deliver sea-level projections to 2120 that do not display discontinuities in trends and uncertainties (Figure SM.1).

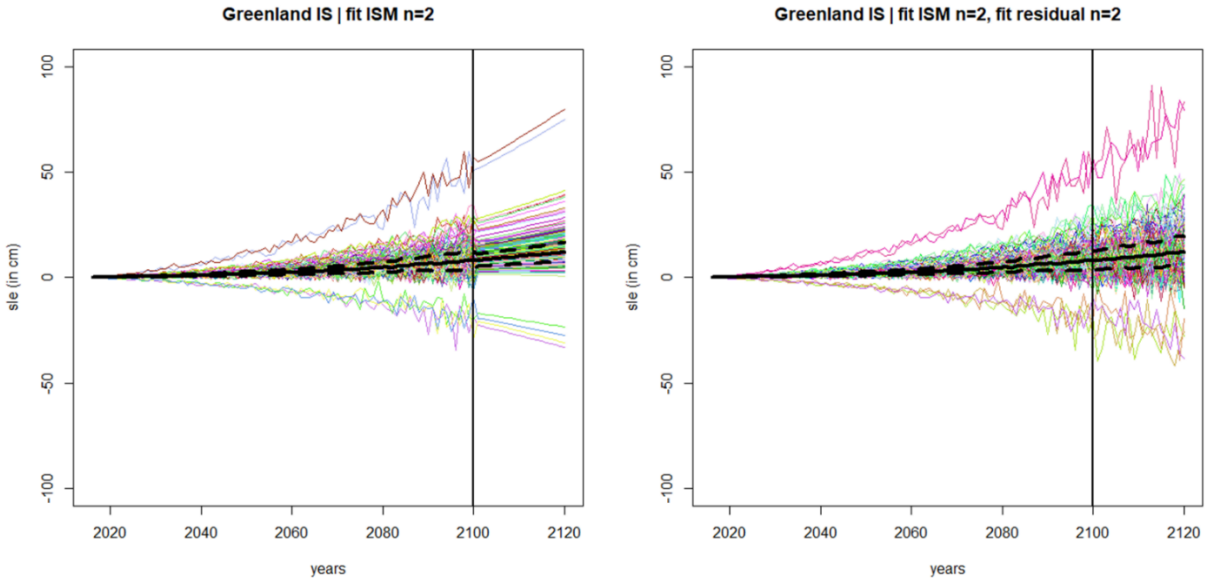

Figure SM-1.2. Extrapolation of the Greenland ice-sheet melting contribution to sea-level rise beyond 2100 of the French 3°C climate scenario, expressed here in sea-level equivalent (sle).The left figure displays extrapolation without modelling of residuals, the right includes the modelling described above.

Supplementary Material 3: projections at specific locations in France.

Table SPM-4.1. *S*ea-level projections at 14 tide gauges in mainland France and overseas regions and territories for a stabilization of climate change at 1.5°C global warming levels. Projections are given in cm with respect to 1995-2014. Sea-level projections to 2150 are illustrative due to lower confidence in the methods and assumptions shown in section 2 of the main text at that timescale.

Stabilization of climate change at 1,5°C GWL		**2050** **50** [17-83]%	**2100** **50** [17-83]%	**2120** **50** [17-83]%	**2150** **50** [17-83]%
Location	**Coordinates**				
Dunkerque	2,37°E/51,05°N	**21** [12,31]	**47** [25,70]	**58** [29,87]	**65** [32,105]
Le Havre	0,11°E/49,48°N	**19** [11,29]	**44** [24,66]	**55** [27,83]	**64** [33,104]
Saint-Nazaire	2,20°O/47,27°N	**19** [12,26]	**43** [27,62]	**54** [31,79]	**58** [30,97]
La Rochelle	1,22°O/46,16°N	**18** [12,26]	**42** [25,60]	**52** [30,77]	**60** [31,98]
Verdon-sur-Mer	1,07°O/45,57°N	**18** [12,26]	**42** [26,60]	**52** [29,76]	**60** [32,99]
Marseille	5,35°E/43,28°N	**18** [10,26]	**39** [23,56]	**48** [26,72]	**60** [33,98]
Fos-sur-Mer	4,89°E/43,42°N	**18** [10,26]	**39** [23,56]	**48** [27,72]	**60** [33,98]
Bastia	9,45°E/42,70°N	**18** [11,26]	**40** [24,58]	**49** [27,73]	**66** [31,109]
La Réunion	55,29°E/20,93°S	**18** [14,24]	**44** [27,64]	**56** [31,84]	**73** [40,115]
Rémire-Montjoly	52,28°O/4,85°N	**20** [14,27]	**43** [28,60]	**52** [32,75]	**76** [44,117]
Kourou	52,63°O/5,17°N	**21** [15,27]	**44** [29,61]	**53** [32,76]	**76** [44,117]
Fort-de-France	61,06°O/14,60°N	**21** [16,27]	**48** [33,65]	**58** [37,82]	**76** [44,117]
Marie-Galante	61,32°O/15,88°N	**21** [16,27]	**48** [33,65]	**58** [37,82]	**76** [44,117]
Pointe-à-Pitre	61,53°O/16,22°N	**21** [16,28]	**48** [33,65]	**58** [36,82]	**76** [44,117]

Table SPM-4.2. Sea-level projections at 14 tide gauges in mainland France and overseas regions and territories for the TRACC scenario reaching 3°C GWL in 2100 (and 2°C GWL in 2050). Projections are given in cm with respect to 1995-2014. Sea-level projections to 2150 are illustrative due to lower confidence in the methods and assumptions shown in section 2 of the main text at that timescale.

3°C GWL TRACC scenario, reaching 2°C GWL in 2050 and 3°C in 2100		**2050** **50** [17-83]%	**2100** **50** [17-83]%	**2120** **50** [17-83]%	**2150** **50** [17-83]%
Location	**Coordinates**				
Dunkerque	2,37°E/51,05°N	**27** [18,37]	**64** [46,87]	**82** [57,110]	**108** [75,145]
Le Havre	0,11°E/49,48°N	**26** [17,36]	**63** [47,84]	**82** [59,107]	**109** [77,140]
Saint-Nazaire	2,20°O/47,27°N	**25** [17,34]	**62** [49,81]	**81** [61,106]	**108** [80,142]
La Rochelle	1,22°O/46,16°N	**24** [16,33]	**62** [48,80]	**80** [61,105]	**107** [79,141]
Verdon-sur-Mer	1,07°O/45,57°N	**25** [16,34]	**62** [49,81]	**80** [61,105]	**107** [78,141]
Marseille	5,35°E/43,28°N	**24** [15,33]	**62** [48,80]	**80** [61,105]	**107** [79,141]
Fos-sur-Mer	4,89°E/43,42°N	**24** [14,33]	**62** [48,80]	**80** [60,105]	**107** [79,141]
Bastia	9,45°E/42,70°N	**24** [15,34]	**63** [50,81]	**82** [63,107]	**110** [82,144]
La Réunion	55,29°E/20,93°S	**21** [15,28]	**64** [45,89]	**87** [58,121]	**120** [78,166]
Rémire-Montjoly	52,28°O/4,85°N	**23** [18,28]	**64** [50,84]	**84** [63,111]	**112** [82,150]
Kourou	52,63°O/5,17°N	**23** [18,29]	**65** [51,85]	**84** [63,113]	**113** [81,153]
Fort-de-France	61,06°O/14,60°N	**24** [20,30]	**69** [54,91]	**89** [67,119]	**118** [85,160]
Marie-Galante	61,32°O/15,88°N	**24** [20,30]	**69** [54,91]	**89** [67,119]	**119** [86,161]
Pointe-à-Pitre	61,53°O/16,22°N	**24** [20,30]	**69** [54,92]	**90** [66,120]	**120** [86,162]

Supplementary Material 4: Newspaper articles mentioning the national adaptation plan (PNACC).

Table SM-4.1. Selection of press articles that mention the "PNACC" (Plan National d'Adaptation au Changement Climatique". Most of the articles were published in the newspaper Le Monde. Le Monde is the most widely read national paid daily newspaper in France that published an online special edition on adaptation to climate change in 2023. Other newspaper referred below are from Les Echos, a national daily newspaper with an economic and financial perspective, and Ouest-France, the largest regional daily newspaper. Other articles mention the PNACC in other newspapers and media, but they are either addressing a more limited audience, have unpractical search engines or report about basic facts with less details than the selection of article below. The TV and radio mentions of the PNACC are not analyzed here. In the column "key points in the article", we present key facts reported by these articles, excluding personal opinions. For example, we excluded a mention that "2100 is the appropriate long-term time horizon" given by a former governmental advisor due to the absence of any supporting argument justifying this statement.

Publication	Key points in the article	Link – last access 06/08/2024
Le Monde, 24th February 2023	-Reports about the announcement of a consultation on the 3rd national adaptation plan planned to take place in spring 2023. The consultation was focused on the relevance of choosing the 3°C GLW scenario as described in section 2.1 in the main text -Refers to a previous report published in April 2022 by the services of the ministry in charge of Environment comparing adaptation plans in other European countries - discusses the scenarios extensively, without giving details of the objectives or details of the adaptation strategy	https://www.lemonde.fr/planete/article/2023/02/24/climat-le-gouvernement-lance-des-travaux-sur-l-adaptation-a-un-rechauffement-presume-a-2-c-ou-4-c_6163138_3244.html
Le Monde 9th April 2023	-Article not mentioning the national adaptation plan but reporting about a relocation experiment by the French Coastal Conservation Agency -The article highlights the co-benefits of such relocation in terms of biodiversity conservation, carbon storage and aquaculture but also that the relocation of cereal crop farmers more inland if the experiment was to be pursued. -Gives the position of a cereal crop farmer previously affected by the Xynthia storm and opposed to relocation and calling for protection against storms and sea-level rise.	https://www.lemonde.fr/planete/article/2023/04/09/combattre-la-mer-ou-la-laisser-envahir-le-territoire-face-a-la-montee-des-eaux-le-dilemme-de-la-charente-maritime_6168838_3244.html
Le Monde, 11th June 2023	-Gives an overview of risks and adaptation options relevant to adaptation, with an emphasis on transformational solutions -Reports about scientists and the High Climate Council https://www.hautconseilclimat.fr/ claiming that the 1st and 2nd climate plans are not sufficient to meet the challenge of adaptation -Reminds that the national adaptation plan is based on an assumption of 3°C GWL, without giving details about the actual measures to be included in the plan. -Argues that many choices are political and societal rather than technical, using the example of e.g. relocation versus protection. -Raises the question of investments in adaptation, mentioning a report by the apolitical Think-Tank I4CE arguing that at least 2.3 billion Euros would be necessary for immediate urgent action on adaptation in 2024 (https://www.i4ce.org/publication/moyens-adaptation-consequences-changement-climatique-france/)	https://www.lemonde.fr/planete/article/2023/06/11/comment-la-france-peut-elle-s-adapter-a-un-rechauffement-climatique-de-4-c_6177144_3244.html
Le Monde, 23 January 2024	-Reports about a public governmental conference on adaptation. -Highlights the difficulties to respond to the protests of farmers while presenting an adaptation plan that would necessarily involve important transformations in the sector. -Reports a communication of the Minister in charge of Environment that the adaptation plan would not be weakened despite the political crisis, without mentioning specific measures that could be included in the plan -Reminds about the unknowns of adaptation funding challenge, citing the I4CE Think-Tank	https://www.lemonde.fr/planete/article/2024/01/23/le-troisieme-plan-national-d-adaptation-au-changement-climatique-lance-sur-fond-de-crise-agricole_6212551_3244.html
Ouest-France, 21 May 2024	-Interview of a former governmental advisor about key challenges of the adaptation plan. The interview is based on a	https://www.ouest-france.fr/environnement/climat/plan-

	policy brief issued by Terra Nova, a left to center Think-Tank available here: https://tnova.fr/ecologie/climat/adapter-la-france-a-4-c-lubie-politique-ou-necessite-fondee-sur-la-science/ -Reminds that the government presented is "4°C scenario" [in France, that is, 3°C GWL] as pessimistic and proposes it should be called "realistic" given current policy announcements. -Argues that it would be useful to deliver scenarios at higher GWL, for example to support critical infrastructure adaptation - Discussion about the potential content of the 3rd National Adaptation Plan, suggesting that the insurance sector	dadaptation-au-changement-climatique-sept-points-sur-lesquels-le-gouvernement-est-attendu-60dceeb6-1751-11ef-89e1-9d0ea397ae43
Le Monde, 20th June 2024	-Reports that the consultation on the national adaptation plan, which was lastly planned to be open for consultation in Spring 2024, is postponed due to the legislative elections. These elections were provoked by the dissolution of the national assembly following the defeat of the presidential party in the European elections. -Leaks a few items of the adaptation plan, including some measures to support adaptation private households to accommodate to geotechnical droughts and incentives to insurers so that they continue to insure in high-risk areas.	https://www.lemonde.fr/planete/article/2024/06/20/reduction-des-emissions-carbonees-et-adaptation-au-rechauffement-les-arbitrages-du-gouvernement-en-suspens_6241770_3244.html
Le Monde, 11th July 2024	-Reports about measures presented by France to the European Commission, including some inspired by the unpublished 3rd National Adaptation Plan. -Reports that the content of the National Adaptation Plan could be presented for consultation in Fall 2024 or in 2025, and that the plan itself could be amended depending on the government that will be nominated after the June 2024 legislative elections.	https://www.lemonde.fr/planete/article/2024/07/11/dans-le-plan-energie-climat-de-la-france-soumis-a-bruxelles-des-objectifs-insuffisants-en-matiere-de-renouvelables_6248839_3244.html
Les Echos, 25th July 2024	-Reports that the National Adaptation was planned to be open for consultation on the 20th June 2024. -Reports the disappointment of the Minister in charge of Environment ("we have been tricked" – "nous avons été piégés") as he tried to have the plan submitted directly by the president of France, without success. -Reminds that the question of adaptation funding remains unclear. -Reminds that the adaptation plan, using as an example the question of relocation vs protection in coastal areas (note that this specific point is based on an interview of the 1st author of this paper, and thus can not be considered an independent source)	https://www.lesechos.fr/politique-societe/societe/lavenir-en-suspens-du-plan-dadaptation-au-changement-climatique-2110396
Le Monde, 17th September 2024	-Reports about delays in national environmental plans, including the national adaptation plan -Reports about the marginalization of the Secretariat for the Ecological Transition, a body within the prime minister services in charge of coordinating environmental policies across ministries -Reports about political leadership moving away from prioritizing environmental policies, in particular as a consequence of the crisis in the sector of Agriculture.	https://www.lemonde.fr/planete/article/2024/09/17/moteur-de-la-transition-ecologique-le-sgpe-traverse-une-crise-existentielle_6320866_3244.html
Le Monde, 25th October 2024	-Reports about a preliminary version of the national adaptation plan that involves new additional funding for the prevention of risks as well as a new services operated by public institutes to support municipalities and regions engaging in adaptation actions -Shows that the plan includes mainly incentives and few constraining measures, few quantified objectives and indicators of success -Announces that the plan will be open for public consultation in December 2024	https://www.lemonde.fr/planete/article/2024/10/25/climat-le-nouveau-plan-pour-adapter-la-france-au-rechauffement-lance-sans-grands-moyens_6359947_3244.html
Le Monde, 10th March 2025	-Announces that the plan will be adopted by the Ministry in Charge of Environment -Reports about the consultation process -Raises concerns about the implementability of the plan and the lack of funding	https://www.lemonde.fr/planete/article/2025/03/10/climat-les-52-mesures-pour-adapter-la-france-a-4-c-de-rechauffement-pretes-a-etre-mises-en-oeuvre_6577743_3244.html
Le Monde, 13rd March 2025	-Reports about a French Climate Committee note on the National adaptation plan -Raises concerns about France being unprepared to climate change and more specifically the lack of funding, its legal fragility, the lack of clarity on its governance, how stakeholders will be supported and how the implementation will be monitored and evaluated.	https://www.lemonde.fr/planete/article/2025/03/13/impacts-du-rechauffement-la-france-n-est-pas-prete-met-en-garde-le-haut-conseil-pour-le-climat_6579946_3244.html

	-Raises concerns about the lack of consideration of social environmental and security issues in the national adaptation plan -Highlights the need for an updated national assessment of risks and adaptation in France since the latest report published between 2010 and 2015 -Raises concerns about the lack of clear and measurable objectives in the plans	

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