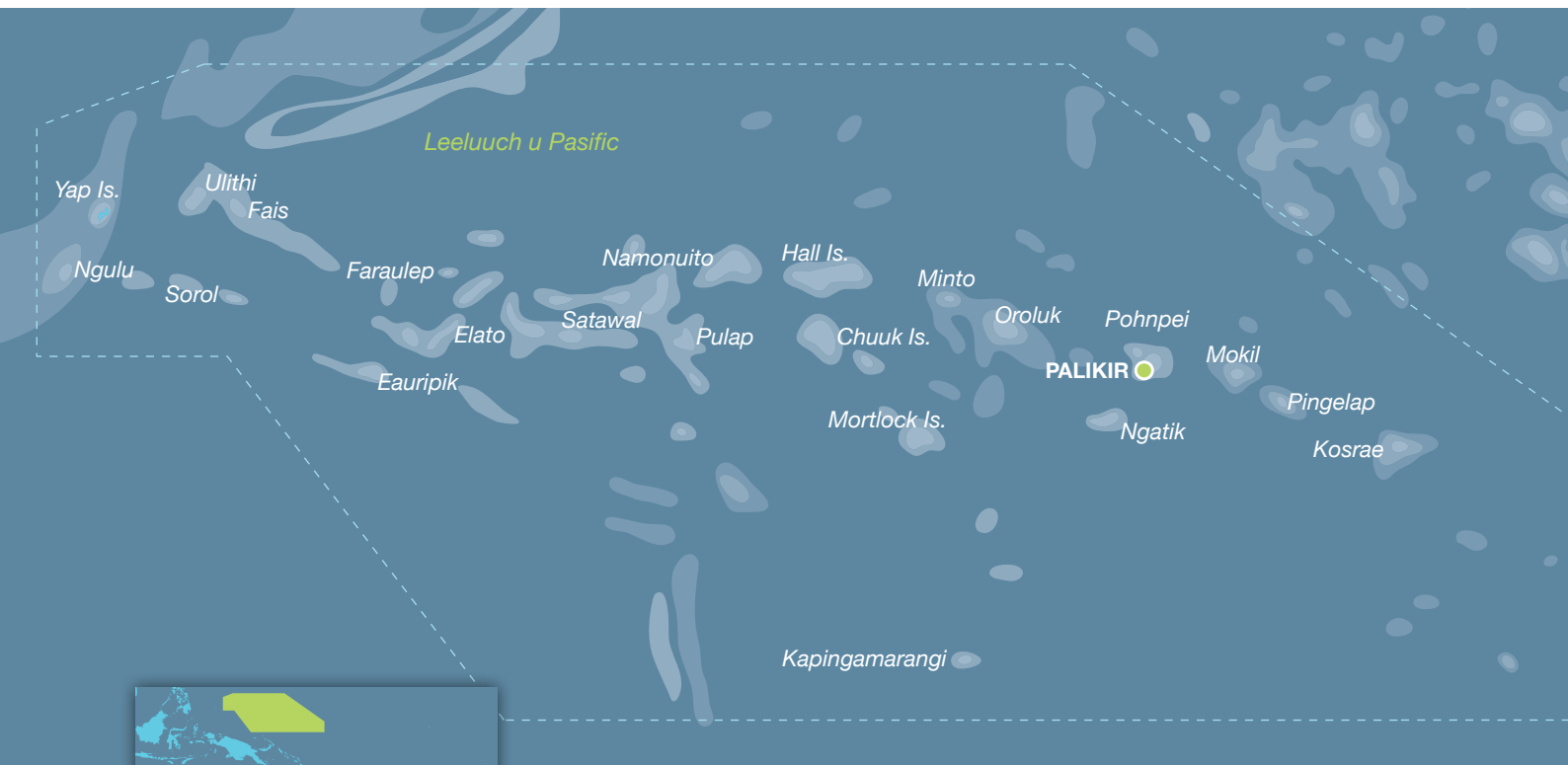


Pacific Climate Change Science Program



Yafang u Federated States of Micronesia e chiney iyan nga m'on



- > Federated States of Micronesia National Weather Service Office
- > Australian Bureau of Meteorology
- > Commonwealth Scientific and Industrial Research Organisation (CSIRO)



Australian Government

Yafang e chineyu Federated States of Micronesia

FSM e de gaa e thil u thilin gelngin e gawel ko tin baaray pul nib gel e gawel nge tin baaray e pul nib gel e garbeb, ba lich ko 3°F (1.5°C). Ri l'agruw mit e yafang ni bayu FSM- Yal' ko November nge madaa ko April nge N'uw ko May nge madaa ko October (Figure 1).

N'uw u lane Federated States of Micronesia e beyan u rogon e mithmith ko (ITCZ), ara thal i manilang nib liyeg e fayleng ni gad bayu tangin. Re thal i manilang ney nibe awe n'uw riy nib gel e bachane nifeng ko leeluuch ni ngek nge yumuch ni ngek u dakene day nib gawel ni beyibi gak nga taabang me yan ngalang me sume manilang riy nge n'uw. Regi lang ney e yan u barbaa e gi day ney (Pacific) nga barbaa. Napan e n'uw ma regi lang

neye ke mithmith iyan ko leeluuch nga tooben e FSM, (West Pacific Monsoon), ara nifeng ni be yan u lane gi day ney u pulwon nga lang e kurebi tapangin ni be gel e n'uw u napane n'uw. Monsoon e be buch ni bachane bagaa e thil u thilin gelngin e gawel u dakene binaw ko gawel u dakene day. Ra taw nga napan ni yib bayay me thilyege yafang ni nap'an e yal' ngeb ko n'uw nib gel.

Yafang u lane Federated States of Micronesia e bagaa e thil ni ma tay

u rebe duw nge reb ni bachane El Nino-Southern Oscillation. Bineye yarmene yafang ni kama buch u lane gi day ney ni kube aw angin ko yafang u fayleng. L'agruw mite yafang nib gel u napane El Nino-Southern Oscillation. El Nino nge La Nina. Ma ku baye neutral phase u thilin. El Nino u Pohnpei ni napane yal' e bagaa ni ma gele yal' ma yugub gele yoor ko n'uw u nap'ane n'uw. La Nina e bagaa ni ma aw e n'uw ni boor ko average u nap'ane yal'. West Pacific Monsoon e bagaa angin ko nam nu Chuuk ngu Waab ko nam nu Pohnpei nge Kosrae. Napan e El Nino mab kan ko ngek maarama n'uw nib gel mara kani yib ko ngal u napane La Nina me buchuuw e n'uw. Intertropical Convergence Zone e buchuuw e n'uw u napane El Nino ma boore n'uw u nap'ane La Nina.

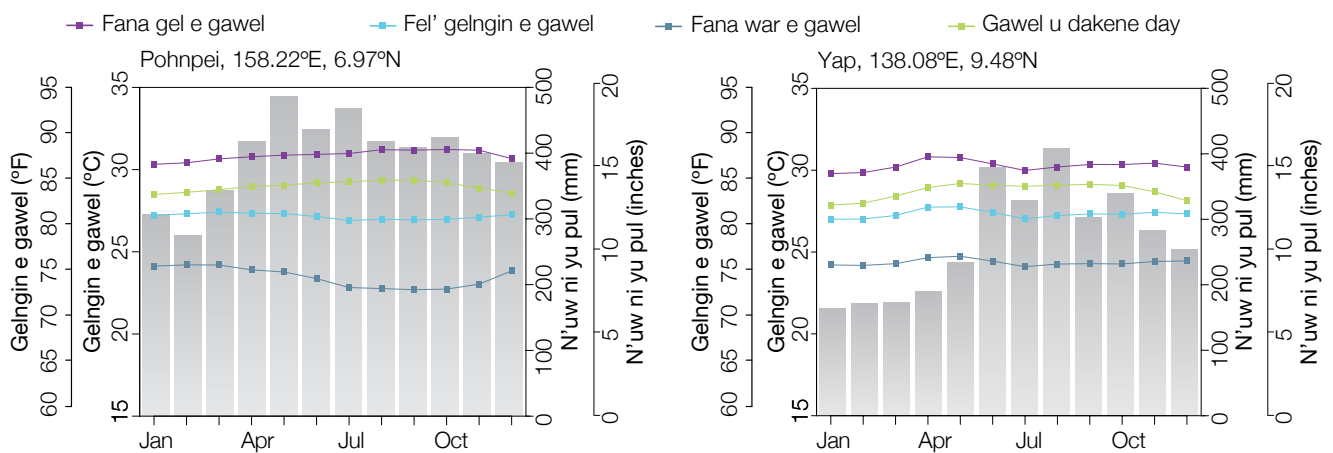


Figure 1: Yafang ni nap'an e n'uw nge gelngin e gawel u Pohnpei ngu Waab.



Lane nguy, Pohnpei

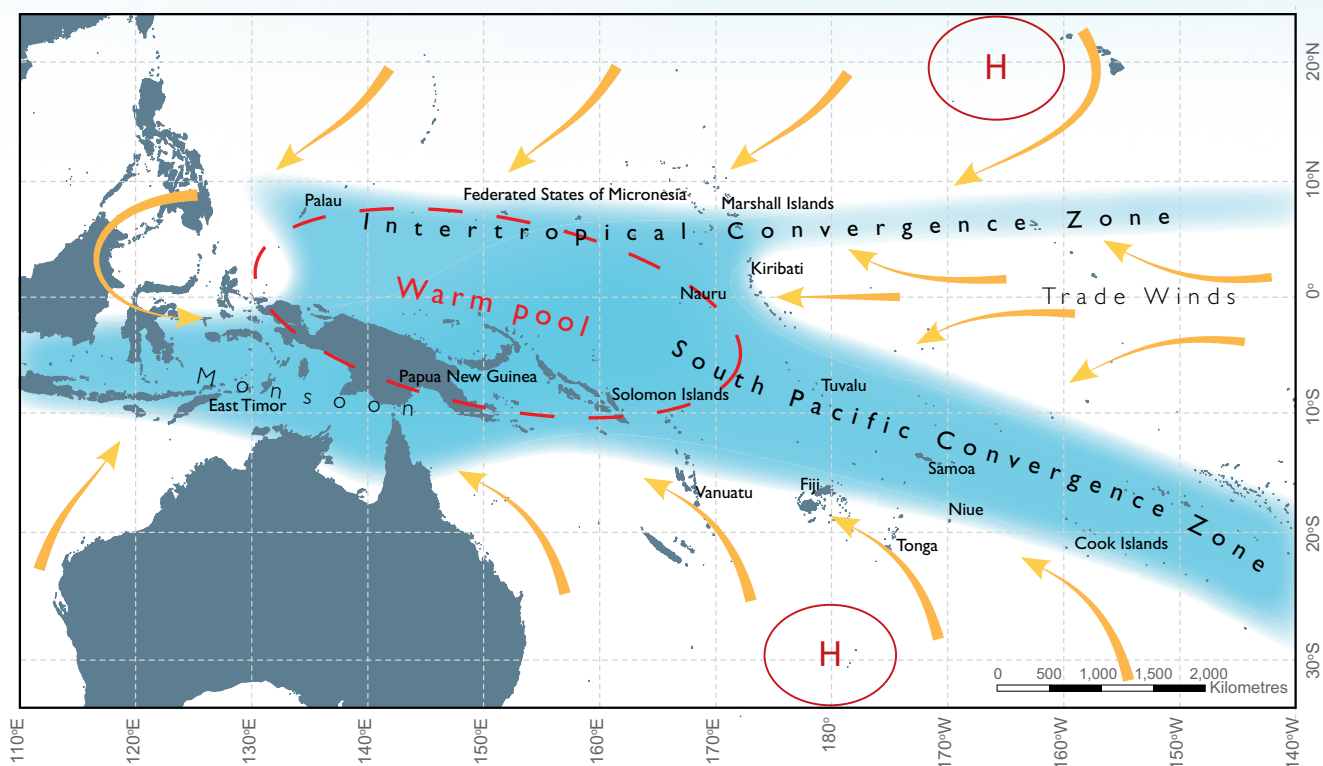


Figure 2: Bagaa ni ireray gil' e tin bagaa e lang ko yafang u lane pul ko November nge madaa ko April. Piskang e be dag ya'an e gin be sor e nifeng ngay u but', Ma'chaw ni yara' e ya'an yuyangi n'uw ko gin beyib i peth e nifeng ngay. Ma line nib math' math' mab tululbuy e be dag ya'an e day nib gawel ko ngal (Warm Pool). Ma H e be dage gin ba tolang e pressure riy.

Tin ba gel e yafangl

Yal' nib gel, yokoo, day nib gaa, ran fa day ni beyib nga dakene binaw, nge but' nibe muchbuu' u napane n'uw e goo be buch u lane FSM. Nap'an e El Nino e ma gel e yal'. Nifiy, ran nge ggan ni be buchuuw e ma buch u napan e yal' ni rib gel. Nap'an e La Nina e bagaa ni be yoor e yokoo' ni be sum u langine Federated States of Micronesia.



Mogothgoth ni buch u Oneop, Chuuk.

Johannes Berdon, National Weather Service Office

Thilthil ko yafang u Federated States of Micronesia

Gawel e ke gel

Rogon e gawal ni yudu u Pohnapei e be gel iyan ni kan napane 1952. (Figure 3). Fana gel e gawel e be yan ngalang ni napan 0.19°F (0.10°C) ni yu ragag e duw. Re gawel ney ni be yan ngalang ba taareb rogon ko gabin yang u fayleng.

N'uw ni yudu u Pohnapei e ke buchuuw

Babyoren e n'uw u Pohnpei ni ka napan e 1950 e be m'ug ni be lich oren e n'uw ni yudu u ngalan e

n'uw (Figure 4), Machane napan e yal' e der gagyel. Der gagyel u Waab ko be yoor e n'uw fa be lich.. Ulane re time ney ma n'uw e ba gaa e thilthil riy u reb e duw nge reb ko galyangi n'ey.

Ke kane day ngalang

Ra i gawele day me gaa ma arame me ikan ngalang. Ice ni ku be ranran nga maday e kube tay tanggiin e day ni be kan ngalang.

Talin e marwel ni bay ko satellites nge tide gauges e be fil tolgin e day. Rogon ni be m'ug ko satellite e be gaa e day ara be kan ngalang u lan

e Federated States of Micronesia ni napan 0.39inches (10mm) u lan rebe duw ni kan napane 1993. Biney e ba gaa ko average u fayleng ni 0.11 – 0.14 inches (2.8 – 3.6 mm) u reb e duw. Re tolgin ney ni yi gub tolang e ba l'ag l'ag rogon ko thil thil u reb a duw ngu reb ara reb e ragag a duw nge reb ni be bucheg boch ban'en ni bode El Nino- Southern Oscillation. Re thil thil ney u tolgin e day u reb e duw nge reb e be m'ug ko Figure 6 nib mu'un e data ngay ko tide gauge ni ka napane 1950 nge satellite ni ka napane 1993.

Acid ko day e be gel i yan

Napan baley ko baley (1/4) ko carbon dioxide e be yan nga fithik e nifeng u reb e duw nib l'ag rogon ko ngongol ko girdii u fayleng. Re carbondioxide ney e be maathuk ko day me sume acid riy. Bineye be lii e lugoch nge ku boche yafas u maday. Pi yafas ney e rib gaa fan ni ngai par nib taareb ni dabi yoor bmit me mathmit bmit. Be yani m'ug ni ka napane 18th century ma acid e be sa yo yoori yan u lane day u Federated States of Micronesia.

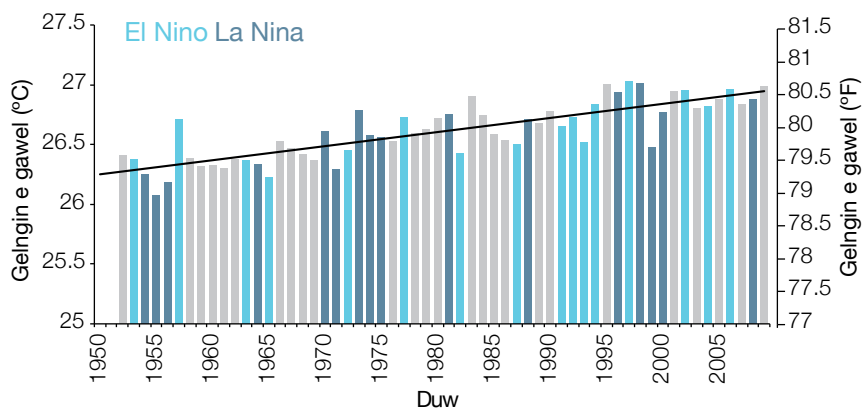


Figure 3: Average ko gelngine gawel ni yu duw u Pohnpei. Bars nib ligjht blue e be dag e duw ko El Nino. Bars nib dark blue e be dag e duw ko La Nina. Bars nib grey e be dag e duw nib neutral.

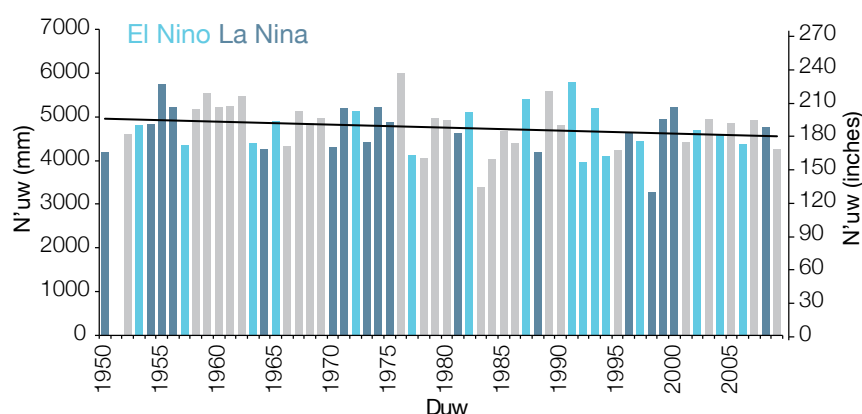


Figure 4: N'uw u Pohnpei ni yudu. Bars nib light blue e be dage duw ni El Nino. Bars nib dark blue e be dage duw ni La Nina ma bars nib grey e be dage duw ni neutral.



Be fek gelingine gawel, Weather Service Office u Pohnpei.

Yafang nga m'on u Federated States of Micronesia

Yafang e be aw angin ko ba dake gubine yafas u lane Federated States of Micronesia. Nangan' ko n'en ra buch ko yafang nga m'on u Federated States of Micronesia e bagaa' fan ya nge yog ni nge gonop e am nge girdii ko rogone thil ni ngan tay.

Bu'uw rogon ni sumniye girdii ni lloan' taline marwel ni nge yog ni ngan nange yafang nga m'on?

Models u fayleng iyan e taline marwel ni thabi fel' ni rayog ni ngan nange thil ni be taye yafang nga m'on. Re taline marwel ney ko yafang e bogi matheeg ni ke yin' luwane yafang ni be murwiliye computers ni gang'. Ba l'eg rogon ko physics ni arame ba mu'un gam'ingine nifeng, day, binaw nge ice ngay.

Boor ni boor mit e pi models ney ni bayu fayleng ni ra reb ma be dage yafang nib thil bochuuw nga reb. Girdii ni lloan' ko Pacific Climate Change Science Program (PCCSP) e kebi gu' 24 ko pi models ney ma kar mel'eg 18 u fithik' nib gamog ko yafang u lane gi day ney western tropical Pacific. Re 18 i models neye ireray e re taline marwel ni yibe murwel ngay be yog ni ngan nange yafang nga m'on.

Yafang nga m'on e boor ban'en ni be dugliy nib mu'une ngongol ko girdii ngay nge gubin ban'en. Dad nanged

ko mange ra buch nga m'on ere ba t'uf ni nge un u lane tanam rodad e tin susune ra buch ninge un ko models ko yafang. Intergovernmental Panel on Climate Change (IPCC) e ke sunmiy boch ban'en ni susune ra buch ni ba l'eg rogon ko tanam nga m'on ko oren e girdii ni ke thil, mon'og ko nam nge mon'og ko lloan'. Bode A1B (ara binu thilin) susune rayani taw nga lukngune century make yoori yoor e girdii u fayleng ma arame me bochuuw iyan, be mon'oge nam ni ke papey, be mon'oge lloan. Greenhouse gas nge aerosol nga fithike nifeng e ireray e pi n'en ni yibe gu' ma yibe murwel ngay ni ngan nang e yafang nga m'on ya ireraye pi n'en ni be thilyeg e yafang.

Yafang nga m'on u Federated States of Micronesia e ba l'eg rogon nga dalip fapi IPCC emissions scenarios: bin sobut' (B1), bin lukngun (A1B), nge bin tolang (A2) ko pi duw ni 2030, 2055, 2090 (Figure 5). Ma bachane ra rebe model mab thil buchuuw nga reb arfan ni ra pi'e

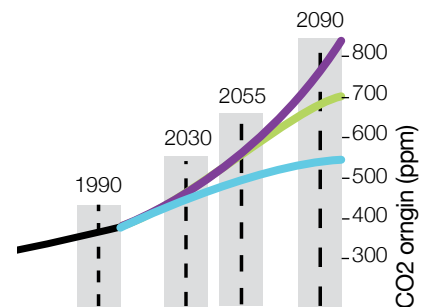


Figure 5: Carbon dioxide (CO₂) oringin (origin u rebe million ppm) ba l'eg rogon ko fa dalip i IPCC emissions scenarios: bin sobut' (B1 – blue), bin lukngun (A1B – green) nge bin tolang (A2- purple). PCCSP e ke yarmiye pi model ko yafang ney ko duw ni 1990, 2030, 2055, nge 2090 (shaded).



Training ko climate projection u Pohnpei Weather Service Office.



Mogoth nitaye day, Lekinioch Chuuk

Yafang nga m'on u Federated States of Micronesia

Ireray maraagen e yafang nga m'on ko Federated States of Micronesia. Faanra kag baadag ni nga kum nang boch meere kum man ko Volume 2 ko Climate Change in the Pacific and New Research ara mman ko web-based climate projections tool ni bay ko www.pacificclimatefuture.net.

Gelngine gawel e bay ki gel i yan

Beyani m'ug ko gabine emission scenarios ni gelngine gawel ni yudu u arow ngu maday e bayi gel iyan u lane Federated Sates of Micronesia (Table 1). Ra yani taw ko 2030 ko bin baaray ni high emissions scenario ma gelngine gawel ni kura mun ngalange 0.7 nge mada' ko 1.9°F (0.4 –1.0°C) u baan ngek e Federated States of Micronesia ma 0.8 –1.8°F (0.4 –1.1°C) u baan ngal e Federated States of Micronesia

Boore rran ni rib gele gawel

Gawel ni be gel iyane aram fan ni bayi yoor e rran nib gele gawel nge nep' nib gawel me buchuuw e rran nib garbeb e yafang.

Thilthil ko rargon e n'uw

Ba dake gubin e climate models u fayleng ma be m'ug riy ni n'uw ni yudu u nge ngal'an e n'uw e be yoor iyan. Machane, ku bay nochi sa marwar riy ya gathi gubine models mab taarebe n'en ni be yog. Ng'al'an e yal' e be m'ug ni be buchuuw iyan.

Boore rran niba almirin e n'uw

Models e be m'ug riy ni rran ni be awe n'uw e bayi yoor iyan.

Bochuuw e yokoo'

Bayani m'ug u fayleng iyan ni bayi buchuuwe yokoo' iyan aray nga tungune 21st century. Ku eri tay ni bayi gel e nifeng ko yokoo' ni bayang u thiline 2% nge 11% ma bayi el mirine n'uw ni napan 20% u langin 100km u lukngune yokoo' nga orel.

Federated States of Micronesia e bayu bangi n'en ni beyani m'ug ni bayi buchuuwe yokoo' i yan nga tungune 21st century ma ku bayi buchuuw e tin baaray e yokoo' nib

Table 1: Rogon ni be m'ug gelngine gawel ni yudu u Federated States of (FSM) u dalipe emissions scenarios, ara gas nib kireb ni be yan nga fithike nifeng, ni dalip ngal'an. Pi namba nibe m'ug e bedag 90% ko models ma thilthil ko yafange ba l'eg rogon ko average u nap'ane 1980-1999.

	2030		2055		2090	
	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)
Ngek u FSM						
Buchuuw e gas ni kireb nga fithik e nifeng	0.4–2.0	0.1–1.1	1.1–2.9	0.6–1.6	1.5–4.1	0.9–2.3
Gathi ri boor e gas kireb nga fithik e nifeng	0.5–2.3	0.3–1.3	1.6–3.8	0.9–2.1	2.7–5.9	1.5–3.3
Boore gas kireb nga fithik e nifeng	0.7–1.9	0.4–1.0	1.8–3.4	1.0–1.8	3.9–6.3	2.2–3.4
Ng'al u FSM						
Buchuuw e gas ni kireb nga fithik e nifeng	0.4–1.8	0.2–1.0	1.0–2.8	0.6–1.6	1.4–4.0	0.8–2.2
Gathi ri boor e gas kireb nga fithik e nifeng	0.6–2.2	0.4–1.2	1.7–3.7	0.9–2.1	2.6–5.8	1.4–3.2
Boore gas kireb nga fithik e nifeng	0.8–1.8	0.4–1.1	1.7–3.3	1.0–1.8	3.8–6.2	2.1–3.5



Kepirohi Falls, Pohnpei.

gel. Day e bayi gaa i yan

Tolngine day e yibe lemnag ni bayi gaa iyan u Federated States of Micronesia (Table 2 nge figure 6). Napane 2030, u tangine bin baaray ni high emissions scenario ara boore gas ni kireb nga fithike nifeng, e be m'ug riy nira gaa e day ni napane 1.2 – 5.9 inches (3 – 15cm). Day nibe gaa nge peth ko thilthil ko yilu' e bayi gel nag gam'ingin e day ko yokoo' nge day nibe yib nga arow u pel'ay. Boor ban'en nib t'uf ni ngan nangu marangaagen e yuyangi ice ni gaa bodu Antarctica ngu Greenland ni kub l'eg rogon ko day nibe gaa, scientists

e beyog ni rayog nib papey ni be gaa e day iyan ko rogon ni un lamnag.

Day nibe acid e bayi ulul iyan

Tangine dalipi emission scenario (low, medium nge high) orene acid u maday u Federated States of Micronesia e bayi yoor iyan nge page 21st century. Bin thabi gaa e thil riy e high emission scenario. Gelngine kireb nibe taye acid ko lugoch nge naa' nge yafas u maday e ke peth nga boche kireb ni bode lugoch ni be li' e yal', mogoth ni be taye yokoo' nge fitaa' ni dariy yarmen.

Table 2: Day nibe gaa ni rogon ni yibe susun nag u Federated States of Micronesia u tangin fa dalipi emissions scenarios nge dalip ngal'an. Namba e be dag 90% ko fapi models ma thil ni bayi taye yuloo' e ba l'ag rogon ko average ko napane 1980-1999

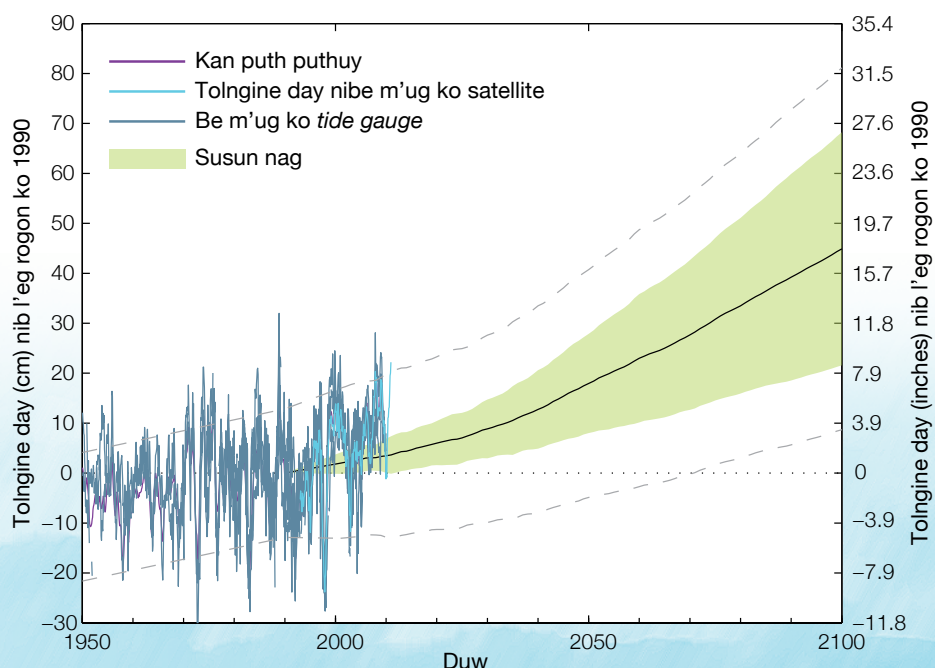
	2030		2055		2090	
	(in)	(cm)	(in)	(cm)	(in)	(cm)
Buchuuw e gas ni kireb nga fithike nifeng	1.2–5.5	3–14	3.5–10.2	9–26	6.3–18.1	16–46
Gathi ri boore gas 19–60 ni kireb nga fithike nifeng	1.2–5.9	3–15	3.5–12.6	9–32	7.5–23.6	
Boore gas 21–62 ni kireb nga fithike nifeng	1.2–5.9	3–15	3.9–11.8	10–30	8.3–24.4	



Johannes Berdon, National Weather Service Office

Mogthgoth ko l'ak nibchane day niyib nga arrow. Lekinioch, Chuuk

Figure 6: Tin kan guu' nge tin yibe susun nag nira buch u Tolngine day nibe thil u Federated States of Micronesia. Tin kan guu' u babayorene tolngine day e be m'ug ko dark blue (Ba l'eg rogon ko tin be m'ug ko tide gauge) ma light blue (Tim ke m'ug ko satellite ni ka napane1993). Kan puth puthuy e pi n'ey nga taabang kebi gagiyal tolngine day u Federated States of Micronesia (kanapane1950) ni bin purple. Bin baaray susun A1B (gathi ri boore gas ni kireb nga fithike nifeng) emissions scenario (be dag 90% ko fapi models) kan acheye gi n'ey nib green ko napane1990 nge madaa' ko 2100. Tin baaray line nib math'math' e susune 90% ko thilthil u tolngine day u rebe duw nge reb.



Thilthil ko yafang u Federated States of Micronesia

- > Ke gel gelngine gawel ma bay ki gel iyan ni bayi yooore rran nib gele gawel nga m'on.
- > N'uw ni yudu w nge ngal'an e n'uw ni ka napane 1952 e be achig iyan u Pohnpei machine u waab e beyani m'ug ni dariye thil. N'uw e yibe susun nag ni bayi yoor u lane bineye century me yooore rran nib gaa' e n'uw me buchuw e rran nib gele yal'.
- > Tungun e bineye century ma yibe susun nag ni bayi buchuw e yokoo' ma kueri tay ni bayi lich e tin bagel e yokoo'.
- > Tolngine day u tooben e Federated States of Micronesia e ke gaa' ma ku ra gaa' iyan u lane bineye century.
- > Acid u maday e be yoor iyan u Federated States of Micronesia. Bayki yoor iyan nge gafgow nage lugoch nge gabin mite yafas u maday.

Pi n'en ni bayu lane re babiyor neye tapangin e marwel nib gel nitaye National Weather Service Offices u Federated States of Micronesia nge Pacific Climate Change Science Program – rebi paangin e marwel ko am nu Australia ni arame Australian Government's International Climate Change Adaptation Initiative. Pi nangan' ney nge ku boch ni fin yibe gay ngan nang e murweliy e Pacific Climate Change Science Program kar puthuy nga boch ni ke pireeg e IPCC ke report nag ko 2007. Faanra ku bay boch ban'en ni ga baadag ni ngam nangu marngaangen e yafang u Federated States of Micronesia meree muguye: *Climate Change in the Pacific Scientific Assessment and New Research. Volume 1: Regional Overview. Volume 2: Country Reports.*

www.pacificclimatechangescience.org

Mu m'ug ko Office ko National Weather Service u Federated States of Micronesia.

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