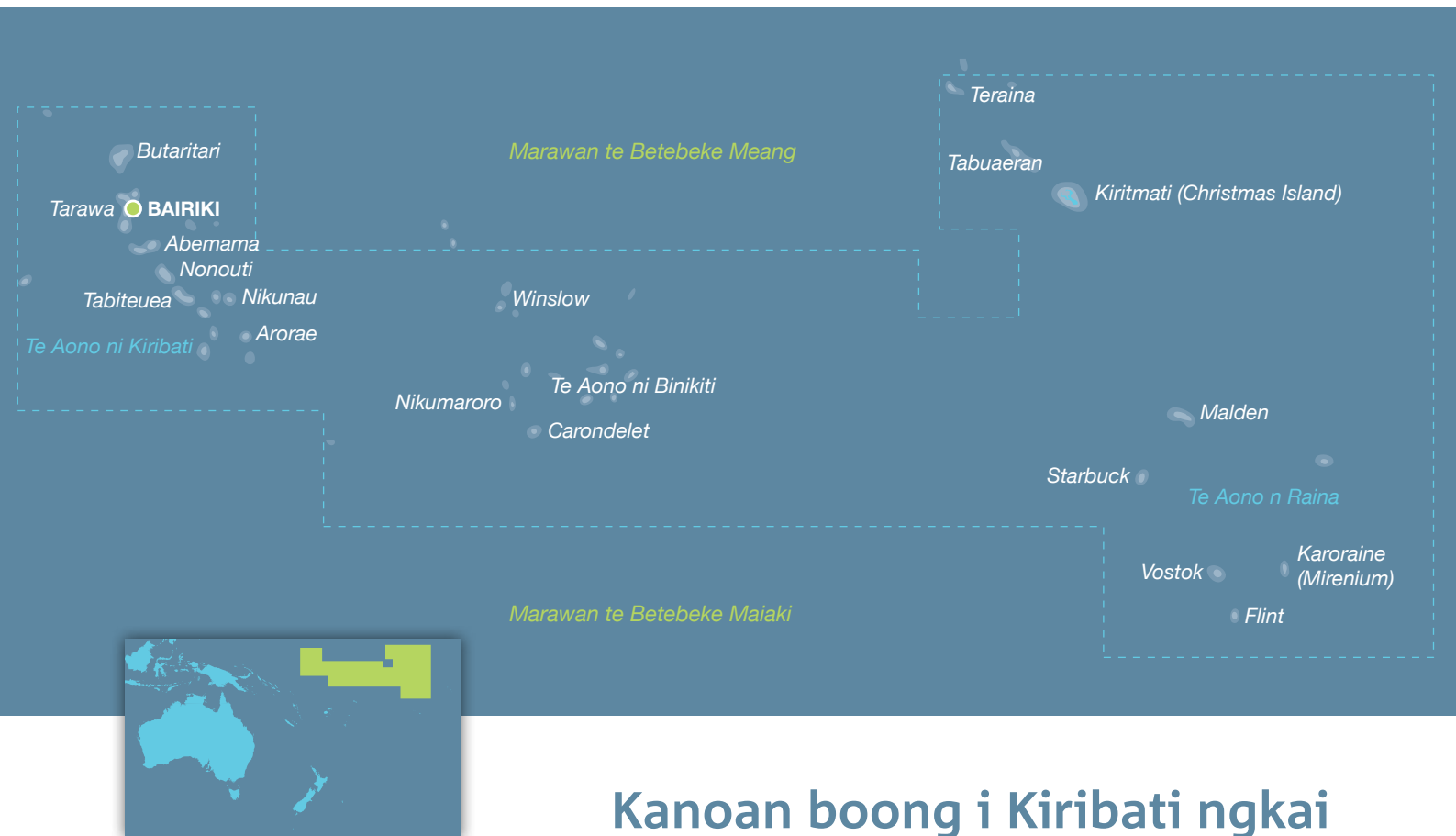


Pacific Climate Change Science Program



Kanoan boong i Kiribati ngkai
ao n taai aika na roko



- > Kiribati Meteorology Service
- > Climate Change Unit of Environment & Conservation Division
- > Australian Bureau of Meteorology
- > Commonwealth Scientific and Industrial Research Organisation (CSIRO)



Australian Government

Kanoan boong i Kiribati ngkai

E kabuebue ao ni korakora buanen te eea i Kiribati ao e rang n rekereke kabuebuena ma kabuebuen taari are katotobibia aba aika uarereke ake taian ane. E teimatoa kabuebuen Kiribati i nanon te ririki teuana ma teuana. Ti 1°C te bibitakin te kabuebue mani mwakoron te ririki teuana ma teuana.

A kakaokoro tain te kabanea ni kakarau ao ni mwauteretera man te tabo teuana ma teuana. I Tarawa, n aonon Kiribati mai maeao, e moa te onoua n namwakaina are te kabanea ni mwauteretera man Tuun ao e riiriki kabanean uarereken bwakan te karau n Okitobwa. Tain te kakarau boni man Nobembwa nakon Eberi. Tain te kakarau i Kiritimati, are 2,000 km i mainikun Tarawa, boni man Tianuare nakon Tuun (Tamnei 1).

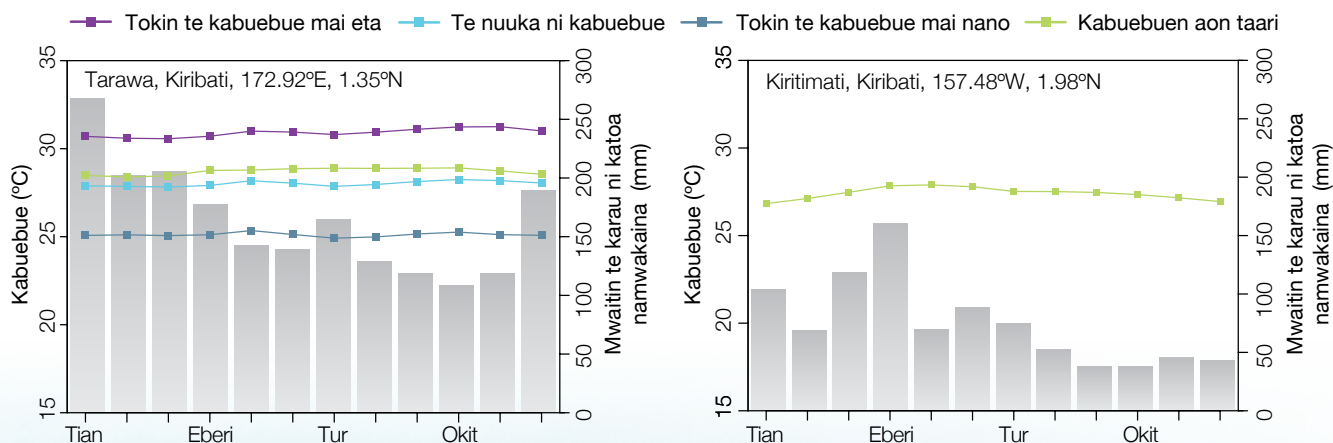
E irekereke bwabwakan te karau i Kiribati ma mwaingingin te South Pacific Convergence Zone (SPCZ) ao te Intertropical Convergence Zone (ICZ). E bangaki te SPCZ ni kabuta te Betebeke Maiaki mai Toromon nako mainikun te Aono ni Kuka ao e kabuta te Betebeke Maiaki te ICZ mai meangin teutana te ekuetoa (Tamnei

2). A riki tabo ni kakarau aikai man te ang ae e abue are e buanerake n tabo ike a kaitibo iai taian ang ao a karika rebwetatan te baa.

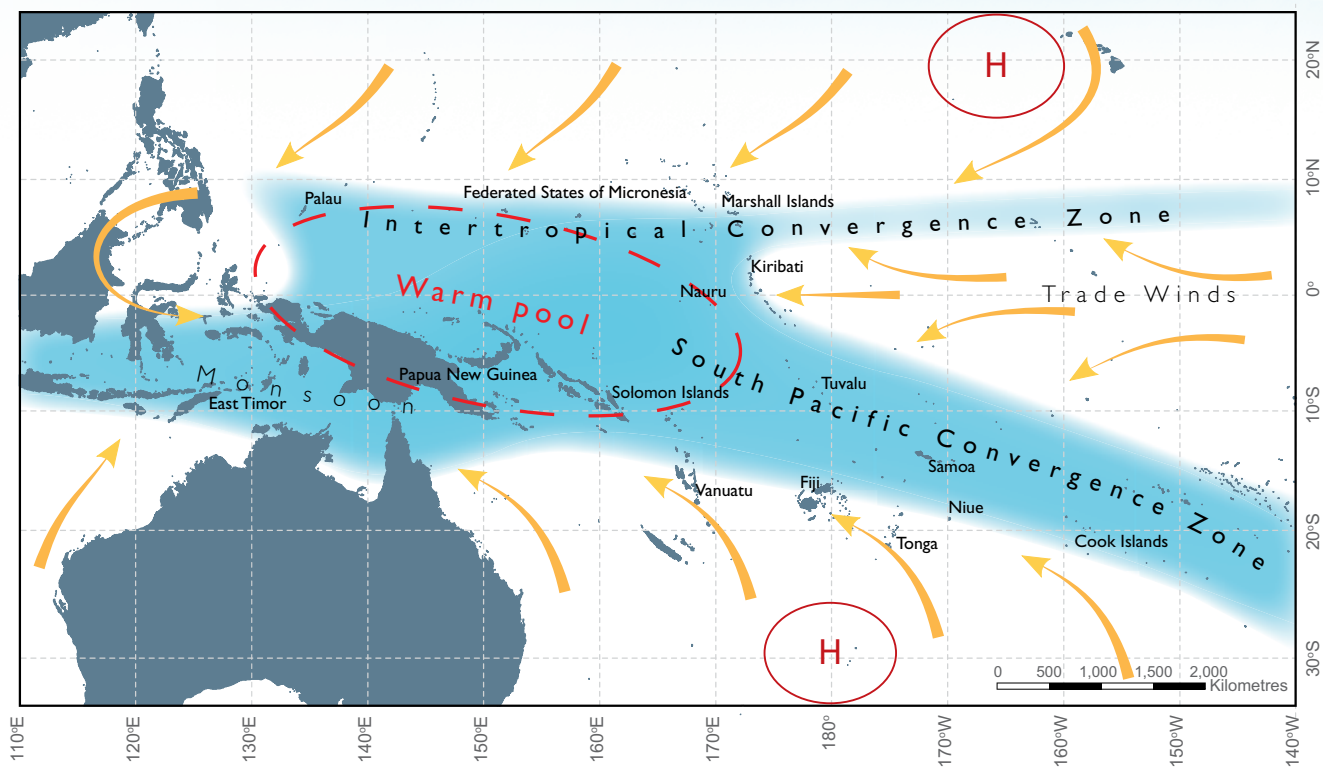
E bibitaki kanoan boong i Kiribati man te ririki teuana nakon teuana ibukin te El Niño-Southern Oscillation. Aio tein kanoang boong are e bon riiriki n te marawa ae te Betebeke ao e rota kanoan te bong ni kabuta te aonnaba. Iai uoua mwakoron te El Niño – Southern Oscillation bwa te El Niño ao te La Niña. Iai naba are bon te marena. Kanoan te El Niño i aon Kiribati ni kabuta bon te kakarau ao te kabuebue ae e raka riki. N ririki ake a kakarau riki ao e a tia ni bwaka te mwaiti ni karau ae 4000 mm i Tarawa ao n ririki ake a mwauteretera riki ao bon ti 150 mm te karau ae e bwaabwaka.

Rongo

A kona n rangi ni korakora taian rongo i Kiribati ao a rekereke riki aikai ma tain te La Niña. Te nuka ni mwaiti ni karau ae e bwabwaka i Kiribati tao bon 2100 mm ao man aio, e raka teutana i aon 900 mm ae e bwabwaka i marenan Mei ao Okitobwa. Man Turai 1988 nakon Ritembwa 1989 ao ti 205 mm te karau ae e bwaka ao man Aokati 1998 nakon Beberuare 1999 e ti bwaka te mwaiti ae 95 mm. E rangi n rotaki te Aono ni Kiribati ma Banaba n taren te ran n tain te rongo are man Eberi 2007 nakon moan 2009. N te tai anne, ao e korakora tarikan ranin mwanibwa ao a babobo baani kaai.



Tamnei 1: Bwabwakan te karau ao kabuebuen te aba i Tarawa ao Kiritimati.



Tamnei 2: Nnen anua ibukin kanoan boong man Novembwa nakon Eberi. A tei kainikoto ibukin ang ake a kaan ma aon taari, e tei te buruu ibukin taabo ike a kaitibo iai rabwatan karau, e kaotaki rabwatan taari ae e aabue ni mwakoron te Betebeke are mai maeao n te mronron ae e wai ao e mwakorokoro rainna ao e tei H ibukin tabo ake a ibeibe ao a mwainging.



Te kataneiai ibukin kawakinan waare ni kaineti ma kanoan boong, Aobitin Tauan Kanoan Boong i Kiribati.

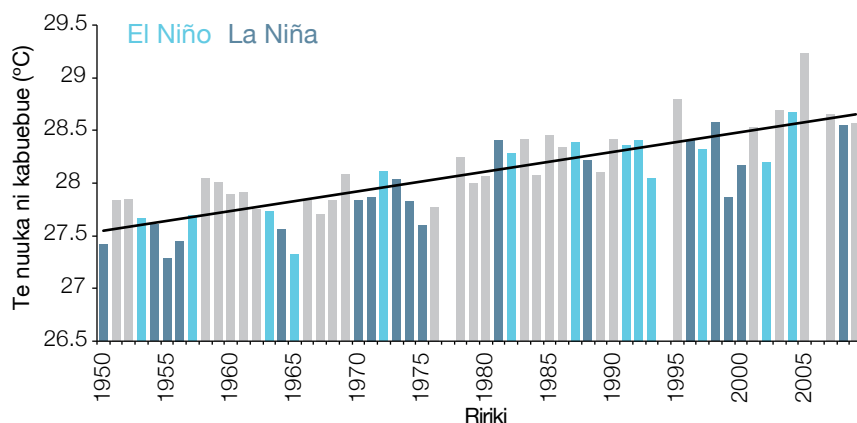


Te bike ao te nama n tain te ora, Tarawa Teinainano.

Bibitiakin kanoan boong i Kiribati

E rikirake te kabuebue

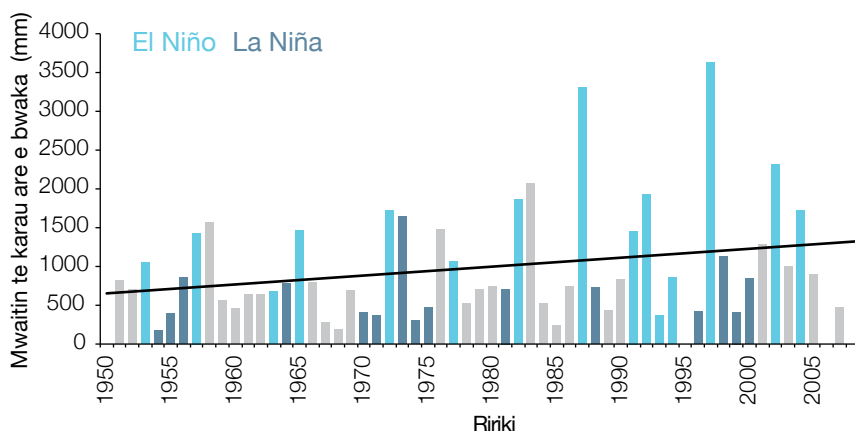
E a tia n rikirake te kabuebue i Tarawa n tokina are mai nano ao are mai eta man 1950 (Tamnei 3). A tia ni birirake tokin kabuebue mai eta n te mwaiti ae 0.18°C ni katoa tebwina te ririki. Titebo keerake aikai ma ake a riki n te aonnaba ae e bwanin n aron norakin rikiraken te kauebue.



Tamnei 3: Te nuuka n kabuebue i Tarawa. A kaotaki n kaai akana a buru-man riirikin te El Niño. A oti man kaai akana a buru-ro riirikin te La Niña ao a kaotaki marena n ririki n kaai akana a roo-mai.

E rikirake mwaitin bwakan te karau

E teretere man taian ware ibukin Kiritimati man 1951 bwa iai te rikirake n tein mwaitin te karau ni bwaka n taina (Tamnei 4), ma akea te bitaki n tain te aki kakarau. Akea te banna ibukin bwabwakan te karau ae e oti i Tarawa. N te maan aei, ao e boni korakora te bibitaki ni bwabwakan te karau man te ririki teuana ma teuana n tabo aika uoua aikai.



Tamnei 4: Mwaitin te karau ni bwaka i Kiritimati. A kaotaki ni kaai akana a buru-mai riirikin te El Niño. A oti man kaai akana a buru-ro riirikin te La Niña ao a kaotaki marena n ririki ni kaai akana a roo-mai

E a tia n rikirake rietatan taari

Ngkana e rikirake kabuebuen taari ao e uti taari n te aro are e a rikirake iai rietan taari ao te iabuti. E korakora naba rikiraken iabutin taari mani maranakon rabwatan taian aiti ake a mena i aon aaba.

A kamanenaki bwaai ni mwakuri ake a kanimwaki ma tiateraite ibukin noran iabutin taari. A oti man taian tiateraite aikai bwa e a tia n rikirake iabutin taari i aon Kiribati ni kabane n te mwaiti ae 1 – 4 mm ni katoa ririki man 1993, ni kabotauaki ma te nuuka ni mwaiti n te aonnaba ae 2.8 – 3.6 mm ni katoa ririki. E boni bibitaki rikiraken iabutin taari man te ririki teuana nakon teuana ao man te bwi n ririki teuana nakon te bwi n ririki teuana ni kaineti ma bwaai n aron te El Niño-Southern Oscillation. E kona n noraki te bibitaki aio n Tamnei 6 are e bon oti naba iai bairean iabutin taari man 1950 ao kukune man te tiateraite man 1993.

E bon tabe naba n rikirake aetietin (acidification) marawa

E rin nako nanon marawa kamwakoron te kabon taiaokitiaite (carbon dioxide) are e reke man aia mwakuri aomata. Ngke e renganaki ranin marawa ma te kabon taiaokitiaite ao e a rikirake naba n aetiete (acid) riki marawa. E rotaki rikiraken taian ane ma maan ake a riki rinkaokaoia man bwain taari ake a kabonete. A rangi ni kakaawaki maan aikai ibukin tamaroan te maiu n te ane. E oti man taian ware ake a kawakinaki man te ka-18 n tienture bwa e bon teimatoa rikiraken aetietin marawan Kiribati.

Kanoang boong i Kiribati n taai aika a na roko

A rotaki anuan te maiu ni kabane i Kiribati ni bibitakin kanoan boong. E rangi ni bongana atakin bibitakin kanoan boong n taai aika a na roko i Kiribati bwa a aonga ni kona aomata ao te Tautaeka ni karaoi babaire ibukin te bitaki.

A kanga taan rabakau ni karioi ke n mwakuriia tein ao aron bitakin kanoan boong n aika na roko?

A rangi n tamaroa banna ni katoto ibukin kanoan boong n te aonnaba ibukin atakin bibitaki nakon taai aika a na roko. Banna ikai bon katoto ake a tia n numeraki raoi ao a kainnanaoki iai kombiuta aika a rianako korakoraia. A boboto i aon mwangan te rabakau ae te 'physics' ao a karinaki iai rongorongon te tabo are e katobibia te aonnaba, marawa, te aba ao te aiti.

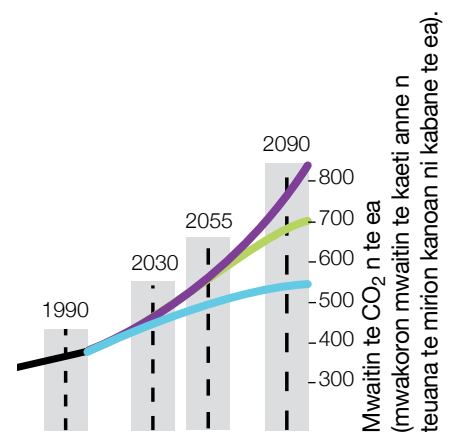
A tirua banna ni katoto ibukin kanoan boong ao e kakaokoro teutana teiia. A tia taan rabakau man te Pacific Climate Change Science Program (PCCSP) n tirobai tamaroan ao buakakan 24 banna ni katoto man te aonnaba ao a kunea bwa iai 18 aika a tamaroa riki ibukin katean bannan kanoan boong n aonon te Betebeke are mai maeao. A tia ni kamanenaki banna aika 18 aikai ibukin karaoan katautau ibukin kanoan boong nakon taai aika a na roko i Kiribati.

E na boboto tein kanoan boong n taai aika a na roko n ana mwakuri te aonnaba ao aia mwakuri aomata. Ti

riai ni kataratarai anua tabeua ibukin taai aika a na roko ibukin katean banna aikai bukina bwa ti aki kona n atai kanoan taai aika a na roko. E a tia te Intergovernmental Panel on Climate Change (IPCC) ni kawenei katautau tabeua ake a boboto i aon bibitaki ni mwaitin te botannaomata, karikirake ao rikiraken bwaai n rabakau. Aio te katoto teuana. N te anua are A1B (nuuka), e katautauaki tokin mwaitin rikiraken te botannaomata n nuukan te tienture aei ao kerikakina i mwin te tai anne, birimwakan rikiraken te iokinibwai, ao birimwakan rikiraken ao tamaroan bwaai n rabakau. A kamanenaki tiinakon ang ake a bubuaka ibukin katean banna ake a bongana ibukin karaoan katautau nakon boong aika a na roko.

A boboto katautau ibukin kanoan boong n taai aika na roko i Kiribati i aon tenuta ana banna te IPCC ni kaineti ma tiinakon aang: ae e uarereke (B1), ae e nuuka (A1B) ao ae e rietata (A2), ibukin taai aika 2030, 2055

ao 2090 (Tamnei 6). A kaweneaki banna aika a kakaokoro bukina bwa a kona ni kakaokoro katautau aikai.



Tamnei 5: Mwaitin (teuana te mwakoro ni katoa mirion, ppm) te kabon taiaokitiaite (CO₂) n rekereke ma ana katautau te IPCC ibukin tiinakon aang: ae e uarereke (B1, buruu), ae e nuuka (A1B, kiriin), ao ae e korakora (A2, bebororo). E a tia te IPCC n betiroi banna ni katautau ibukin kanoan boong n taai aika 1990, 2030, 2055 ao 2090 (taabo akana a kanuuaki).



Taran Tarawa Teinainano mai eta.



Tauan te kabuebue, Aobitin
Tauan Kanoan Boong i Kiribati.

Kanoang boong i Kiribati n taai aika a na roko

Aio te rongorongo ae e kimototo ibukin katautauan kanoan boong i Kiribati. Ibukin rongorongo riki tabeua, noora *Volume 2 of Climate Change in the Pacific: Scientific Assessment and New Research* (Mwakoro 2 Bibitakin Kanoan Boong n te Betebeke: Aia Reke Taan Rabakau ao te Kakae ae e Boou) ao bwain katarataran bibitakin kanoan boong n te uebo tiaite (web site) ae Pacific Climate Futures (available at www.pacificclimatefutures.net).

E na teimatoa keeraken te kabuebue

E oti man taian katautau ibukin tiinakon ang ake a boitin bwa e na teimatoa keeraken nukan kabuebue n te ang ao aon marawa nakon taai aika a na roko i Kiribati (Taibora 1). N te katautau ibukin korakoran tiinakon ang aika a biotin, ao e kantaningaki bwa n 2030 ao e na keerake te kabuebue nakon te mwaiti ae 0.3 - 1.3°C ibukin te Aono ni Kiribati ao 0.4–1.2°C ibukin te Aono ni Binikiti ao te Aono n Raina.

Rakan mwaitin boong aika a kabuebue

E na rikirake mwaitin boong ma tairiki aika a kabuebue ao keerikakin boong aika a mwaitoro mani keeraken nuukan kabuebue.

Bibitakin tein bwakan te karau

E oti man angiin banna ni katoto bwa e na keerake mwaitin bwakan te karau n te ka-21 n tienture. E ngae n anne ao boni iai te aki koaua raoi ibukin katautau ni bwakan te karau ao e aki tiki-teuana mwin taian banna ni katoto aikai. E kantaningaki bwa e na keerikaki mwaitin te rongo n te tienture aei.

E na mwaiti riki korakoran bwakan te karau

E oti mani banna ni katoto bwa e na korakora riki mwaitin bwakan te karau.



Kakibanakoan te katibu, Aobitin Tauan Kanoan Boong i Kiribati.



Mataniwin taari i rarikin Bonriki, Tarawa Teinainano.

Table 1: Projected annual average air temperature changes for Kiribati for three emissions scenarios and three time periods. Values represent 90% of the range of the models and changes are relative to the average of the period 1980-1999.

	2030 (°C)	2055 (°C)	2090 (°C)
Gilbert Islands			
Uarereken tiinakon ang	0.2–1.2	0.7–1.9	1.0–2.4
Nuukan tiinakon ang	0.2–1.4	0.9–2.3	1.7–3.5
Korakoran tiinakon ang	0.3–1.3	1.0–2.2	2.2–3.8
Phoenix Islands			
Uarereken tiinakon ang	0.2–1.2	0.7–1.9	1.0–2.4
Nuukan tiinakon ang	0.4–1.4	1.0–2.2	1.7–3.5
Korakoran tiinakon ang	0.4–1.2	1.1–2.1	2.3–3.7
Line Islands			
Uarereken tiinakon ang	0.2–1.2	0.6–1.8	1.0–2.4
Nuukan tiinakon ang	0.3–1.3	1.0–2.2	1.6–3.4
Korakoran tiinakon ang	0.4–1.2	1.0–2.0	2.3–3.5

E na teimatoa n rikirake iabutin taari

E kantaningaki bwa e na teimatoa n rikirake iabutin taari i Kiribati (Taibora 1 ao Tamnei 6). I aan korakoran tiinakon ang, ao te katautauaki bwa n 2030 ao e na rikirake te iabut aei n te ware ae 5 – 14 cm. E na rikirake korakoran buakan taari ao iekakin mataniwin te aba man rikiraken iabutin taari ao bibitakin kanoan ririki. Bukina bwa a rawata bwaai aika a tuai n ataki raoi anuaia, n aron rekereken maranakon taian aiti ake i Antatika ao Greenland ma keraken iabutin taari, ao a katautaua taan rabakau bwa e kona ni korakora riki

Tameni 6: Rikiraken iabutin taari are e a tia n noraki ao are e katautauaki i Kiribati. E kaotaki te rikirake are e bon noraki n te mata ae e buru-ro (mani bwain tauan te iabuti) ao n te mata ae e buru-maii (waare man te tiateraite man 1993). A kaotaki katautau ibukin rikiraken iabutin taari i rarikin Kiribati (man 1950) n te mata ae e beboro. A kaotaki katautau ibukin A1B (nuuka ni ware) n tiinakon ang n taabo akana a karanaki n te mawaawa man 1990 nakon 2100. E kaotaki bibitakin rikiraken iabutin taari n te katautau ae 90% n taian rain akana a mwakorokoro.

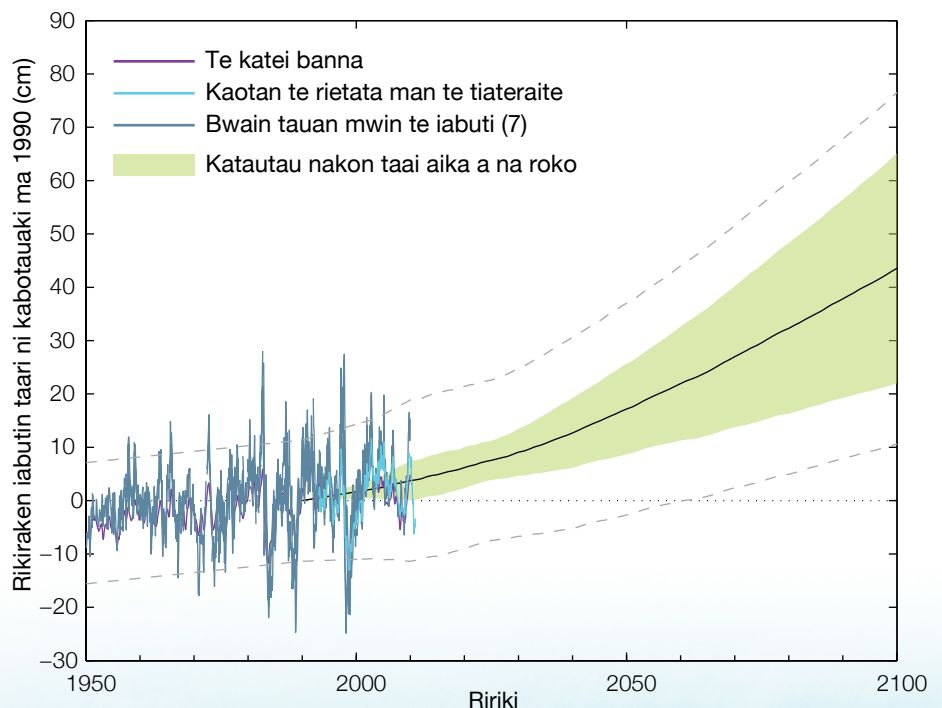
te iabuti nakon are ti ataia ngkai.

Taibora 2: Katautau ibukin rikiraken iabutin taari i Kiribati ibukin tenna tiinakon ang ao tenna taai aika a kakaokoro. E kaota 90% tein banna ni katoto ao e kabotauaki ma te nuuka ni kabuebue ibukin ririki aika 1980 – 1999.

	2030 (cm)	2055 (cm)	2090 (cm)
Low emissions scenario	4–13	9–25	16–45
Medium emissions scenario	5–14	10–29	19–57
High emissions scenario	5–14	10–28	20–58

E na reitinako aetietin marawa

I aan tenna katautau ibukin tiinakon ang (uarereke, nuuka ao ae e rietata), ao e na teimatoa rikiraken aetietin marawa n te ka-21 n tienture. E na korakora riki te bitaki ngkana e korakora tiinakon ang. E na kakaiaiki riki mwin aetietin marawa man urubwai riki tabeua n aron maten taian ane, urubwai man te buaka ao korakoran te akawa.



Bibitakin kanoan boong i Kiribati

- > E a tia n rikirake te kabuebue ao e na teimatoa n rikirake te kabuebue ao mwaitin boong aika a rangi ni kabuebue nakon taai aika i mwaaira.
- > E a tia n rikirake mwaitin te kakarau i Kiritimati man 1951. Akea bibitakin anuan bwabwakan te karau ae e a tia n noraki i Tarawa n te tai aei. E katautakai bwa e na rikirake mwaitin bwakan te karau n te tienture aei n raonaki ma korakoran ngoon te karau ao kerikakin mwaitin te rongo.
- > E a tia n rikirake iabutin taari irarikin Kiribati ao e na teimatoa n rikirake rinanon te tienture aei.
- > E tabe n rikirake aetietin marawan Kiribati. E na teimatoa n rikirake ao ni karika te ananga ni kabuanibwai nakon bwaai ake a maiu ribuakon te ane.

E reke kanoan te bebwa ni kaongora aio man te reitaki i marenan Aobitin Tauan Kanoan Boong i Kiribati ao te Pacific Climate Change Science Program – mwaangan te Tautaeka n Aotiteria ae te International Climate Change Adaptation Initiative. E boboto te rongorongon ao te kakaee are e karaoaki man te Pacific Climate Change Science Program i aon kukune ake a oti n IPCC Fourth Assessment Report are n 2007. Noora te boki ae *Climate Change in the Pacific: Scientific Assessment and New Research. Volume 1: Regional Overview. Volume 2: Country Reports* ibukin kabwaninan rongorongon kanoan boong i Kiribati.

www.pacificclimatechangescience.org

Ibukin te reitaki ma Aobitin
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