

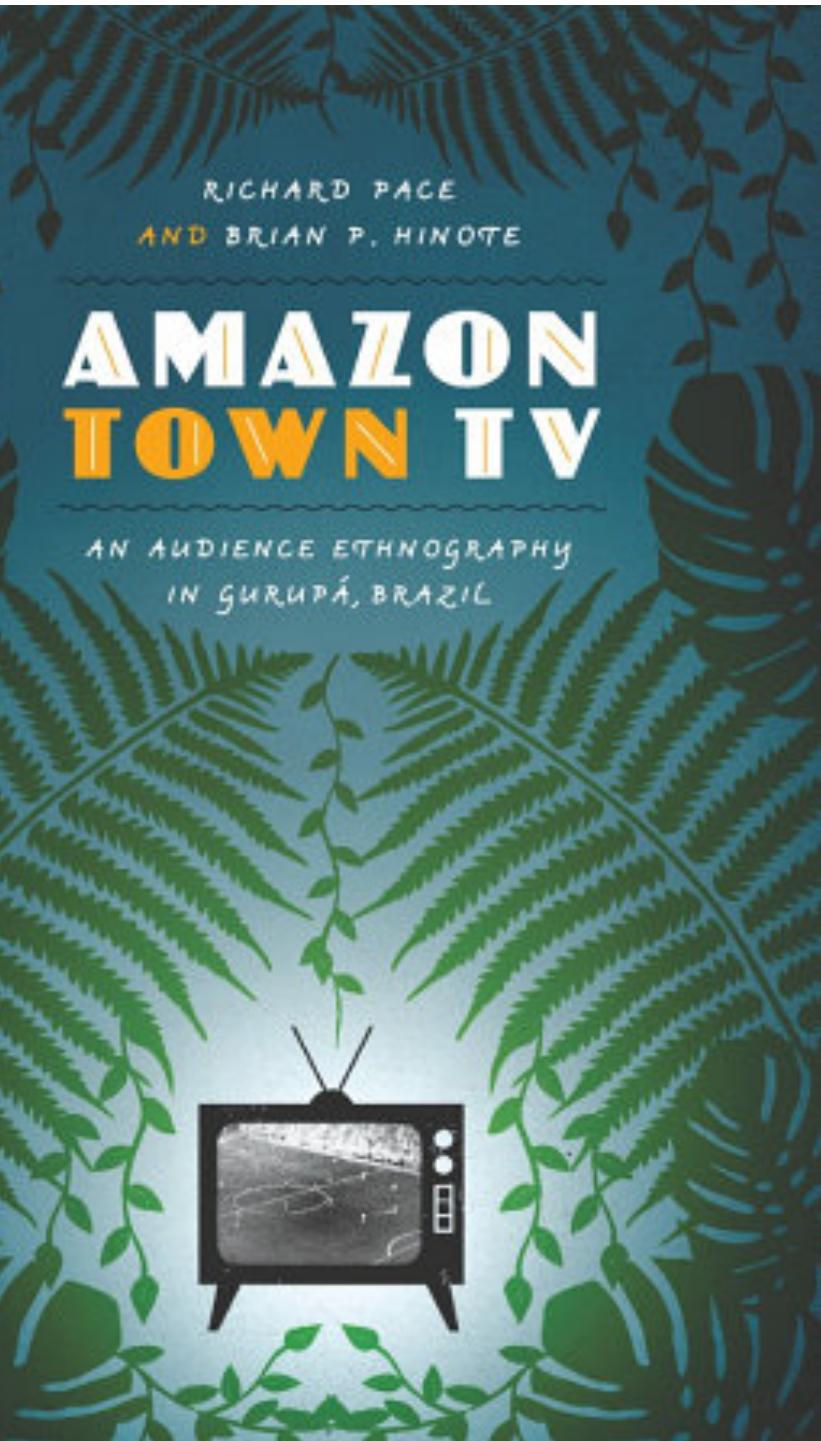
Climate change in an Amazon town: Media and environmental perceptions in ever-rising waters

Sam Schramski

Federal University of Amazonas

CSTPR-CU Boulder





Meaning of this title

- Amazon Town TV
- Richard Pace and Brian Hinote
- What is marked as passive and what is resistance?



Scaling from community-level on up climate
climate change or otherwise)

B.S. Haldane's on Being the Right Size

Scale problem in scope of governance

- Ideas of collective action

Perception is less understood in such discussions

- How do we link individual
- Community
- Up to entities of region and beyond

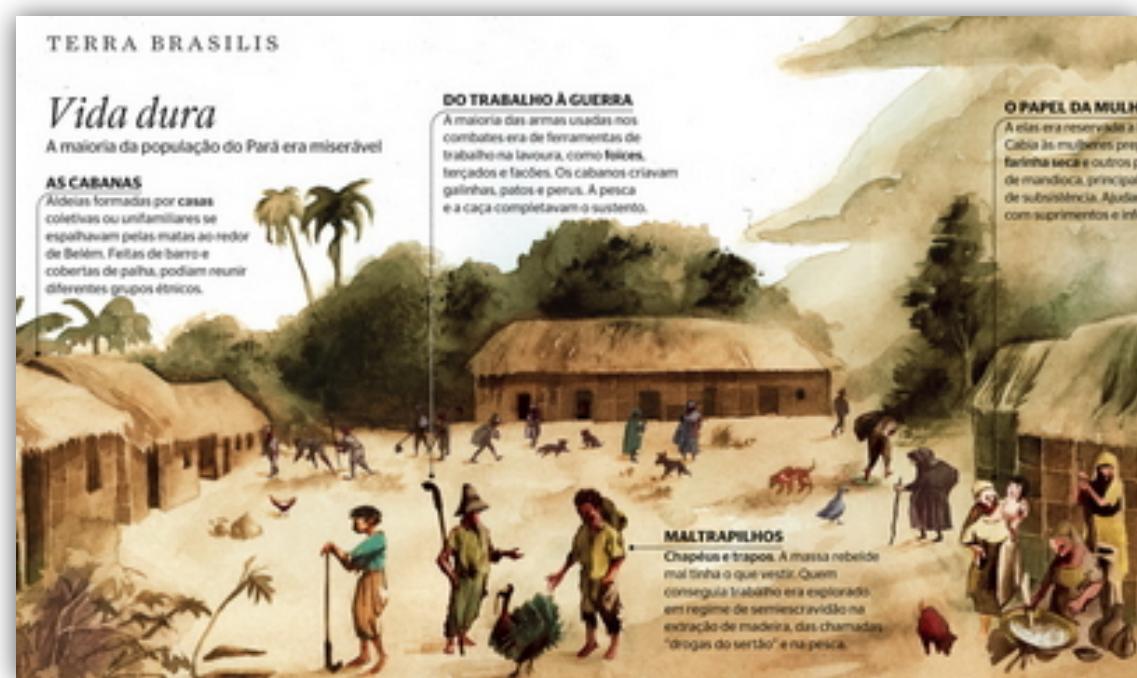
Media, policy, science linkage

ence, distortions, balance, and
ception

edia is shown as a strong driver of
ic opinion, but for CC this varies
hendously by country

ere does the science fit in?
lways comport with the noble
selvagem

icy is the grand arbiter—whether
rom governments, or increasingly
the Brazilian Amazonian context,
environmental policy



Scaling up: why this way?

One method for how to understand and perhaps characterize (although not explain) the context of rural Amazonians

Case study approach may be ideal for wide spectrum—geographic and in scale (or level!)

The Amazon

40% Brazil is covered by the basin

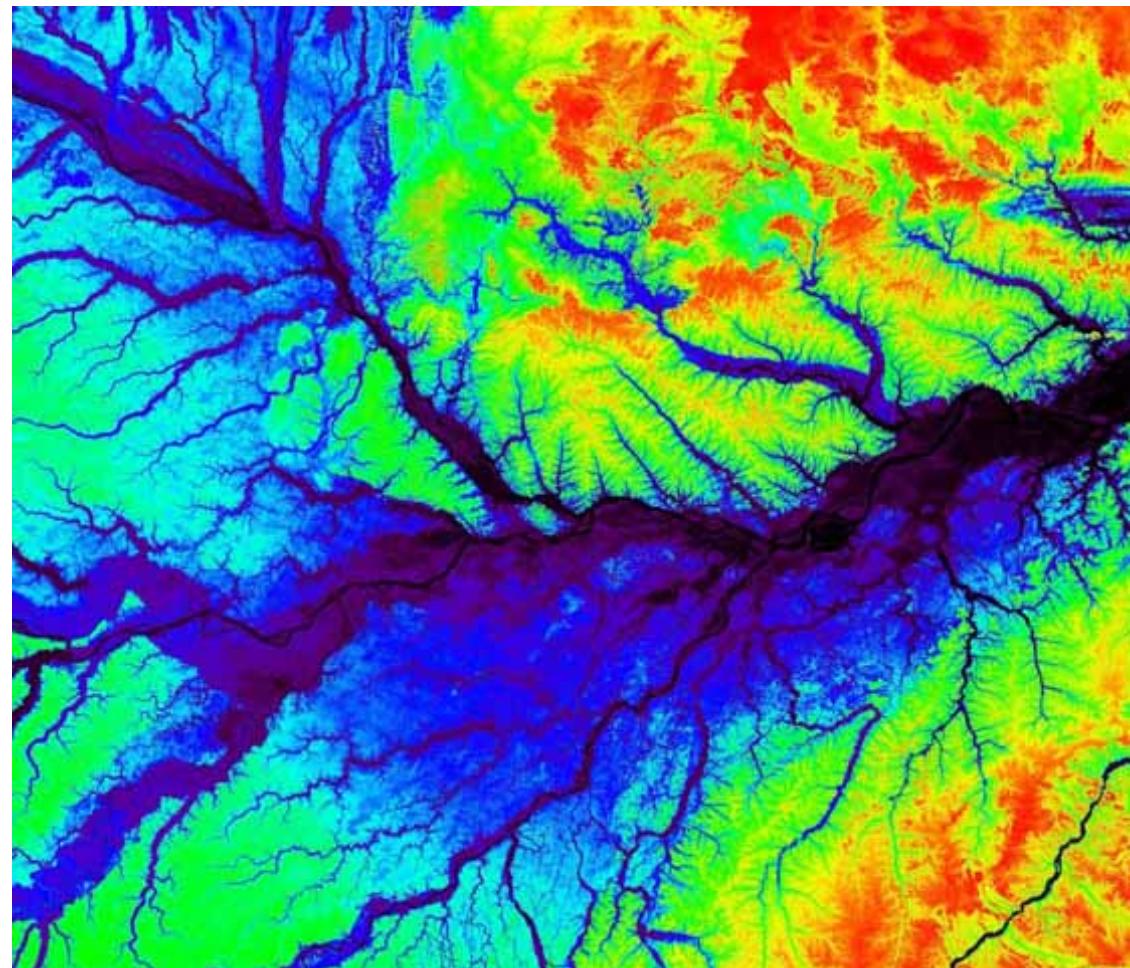
Biological diversity

Cultural diversity

Urbanization=70%

Riverine flux

- *Igapó*
- *Várzea* (paleo-várzea)
- *Terra firme*



Global Rainforest Mapping

Amazon and climate change

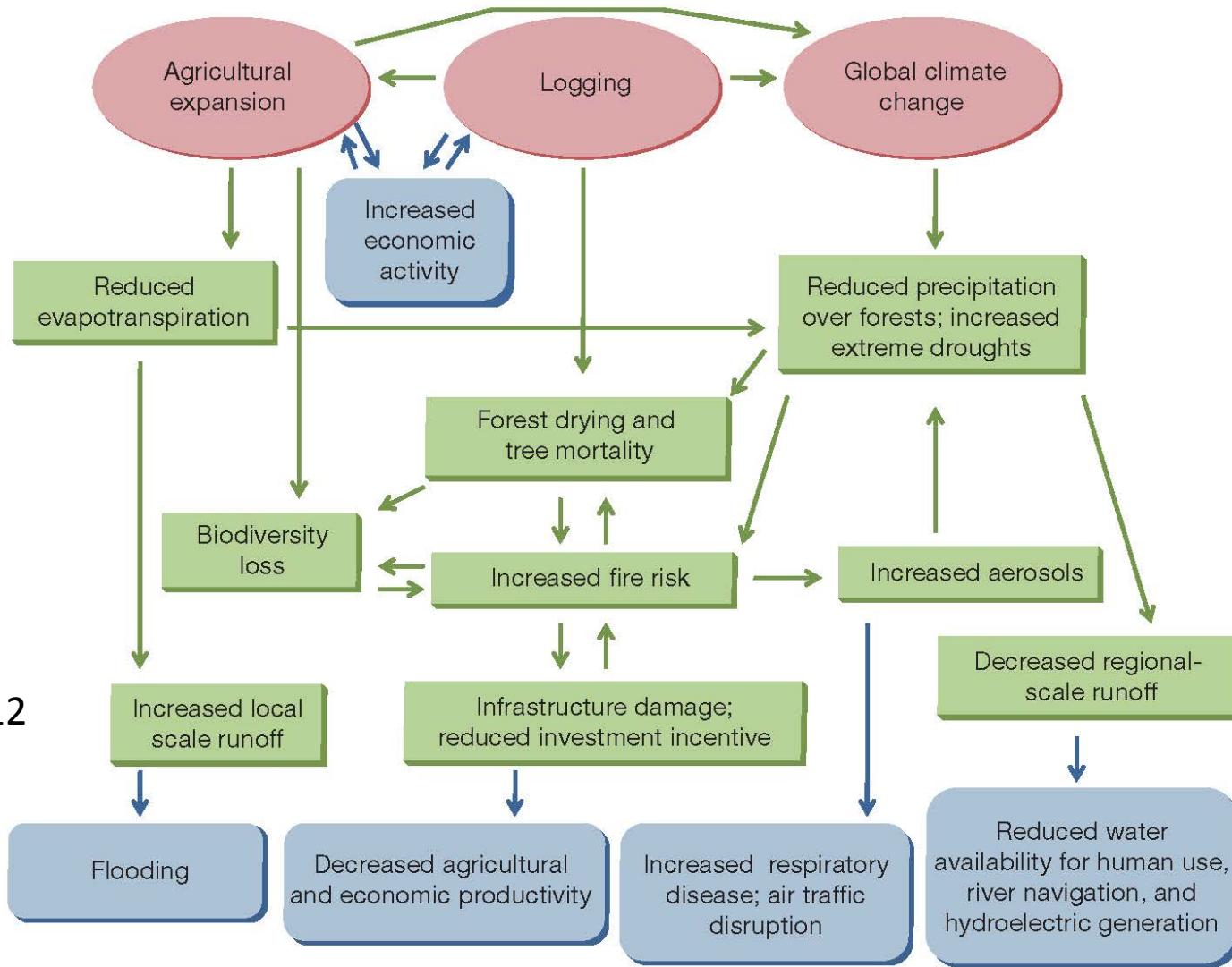
IPCC mentions flooding in the lowland Delta parts of the basin
(1-2.5mm to 5mm)

- Affected fisheries
- Changes in mangrove ecosystems

Certain affected plant communities → increased evapotranspiration

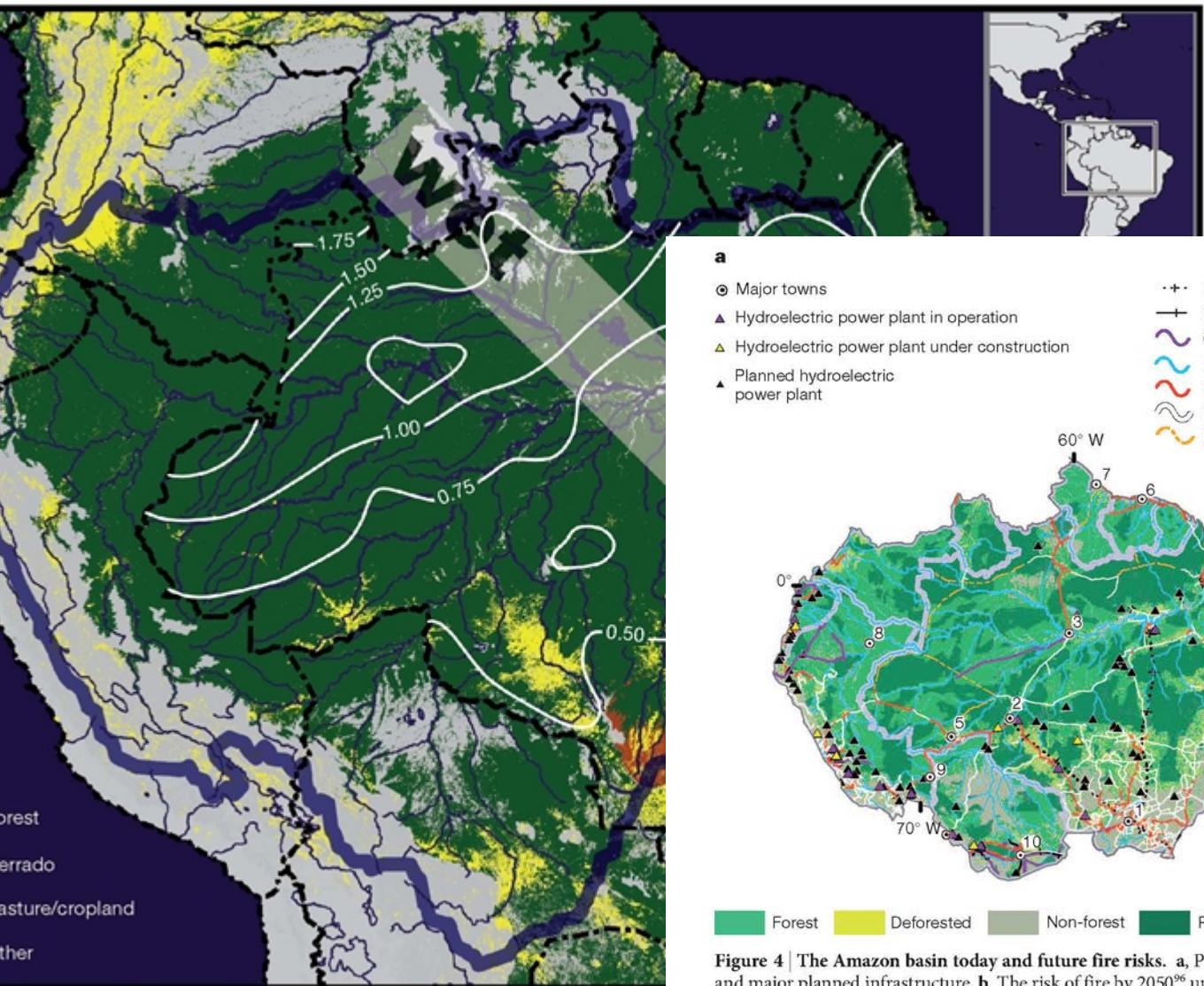
- Massive drying events, loss of “homegrown rainfall” events
- 2°C rise above pre-industrial levels=20-40% of the Amazon die off within 100 years.
- 3°C rise=75% of the forest destroyed by drought over the following century, while a 4°C rise would kill off 85%

Uncertainty to be sure—and then the human equation



avidson et al. 2012

Figure 1 | Interactions between global climate, land use, fire, hydrology, ecology and human dimensions. Forcing factors are indicated with red ovals; processes addressed in this Review are indicated by green boxes and arrows; and consequences for human society are indicated by blue boxes with rounded corners.



Davidson et al . 2012

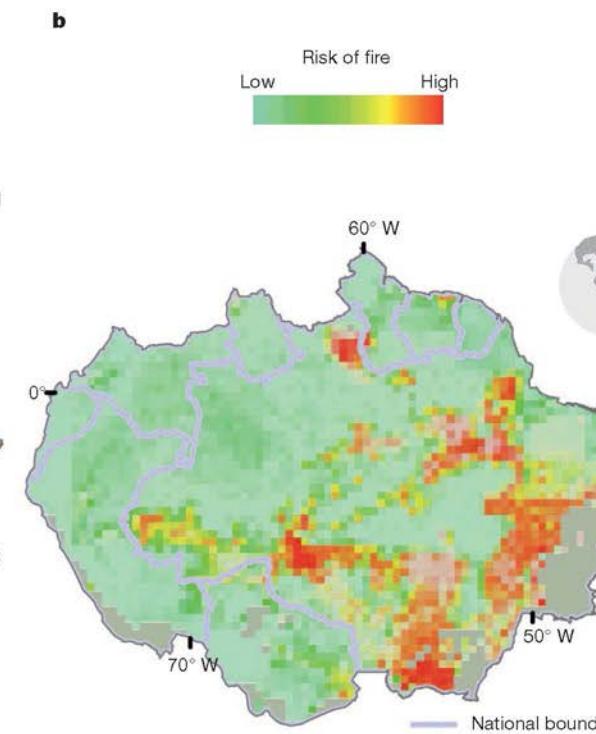
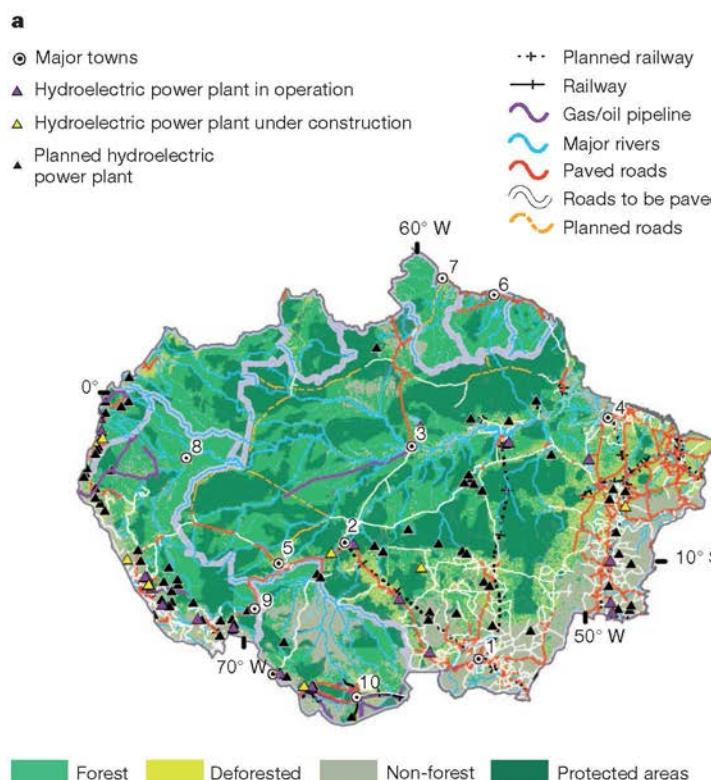


Figure 4 | The Amazon basin today and future fire risks. **a**, Protected areas and major planned infrastructure. **b**, The risk of fire by 2050⁹⁶ under business-as-usual deforestation and climate change scenarios²⁴. The numbers in

a indicate the following cities: 1, Cuiabá; 2, Porto Velho; 3, Manaus; 4, Iquitos; 5, Rio Branco; 6, Paramaribo; 7, Georgetown; 8, Iquitos; 9, Puerto Maldonado; 10, Santa Cruz de la Sierra.

tic gradient across the Amazon basin. Main figure, the basin is demarcated by a thick blue line; isopleths of mean during the three driest months of the year⁹⁷ (in mm; white onto four land-cover classes^{98,99} (key at bottom left). These presented only for areas within Brazil, because of lack of adequate

data elsewhere. conditions in the northwest to long and pronounced dry seasons in the southeast, which includes Cerrado (savannah/woodland) vegetation. National boundaries are demarcated by broken black lines. Inset, map showing area of main figure (boxed).

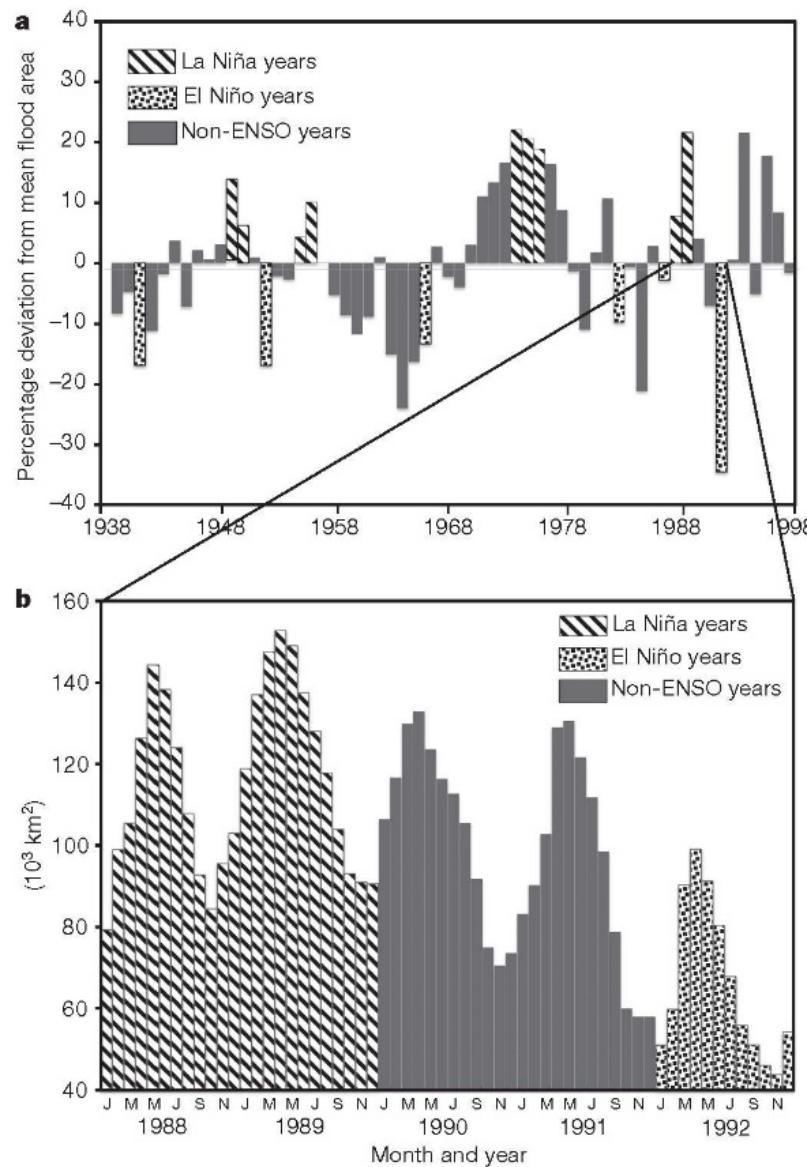
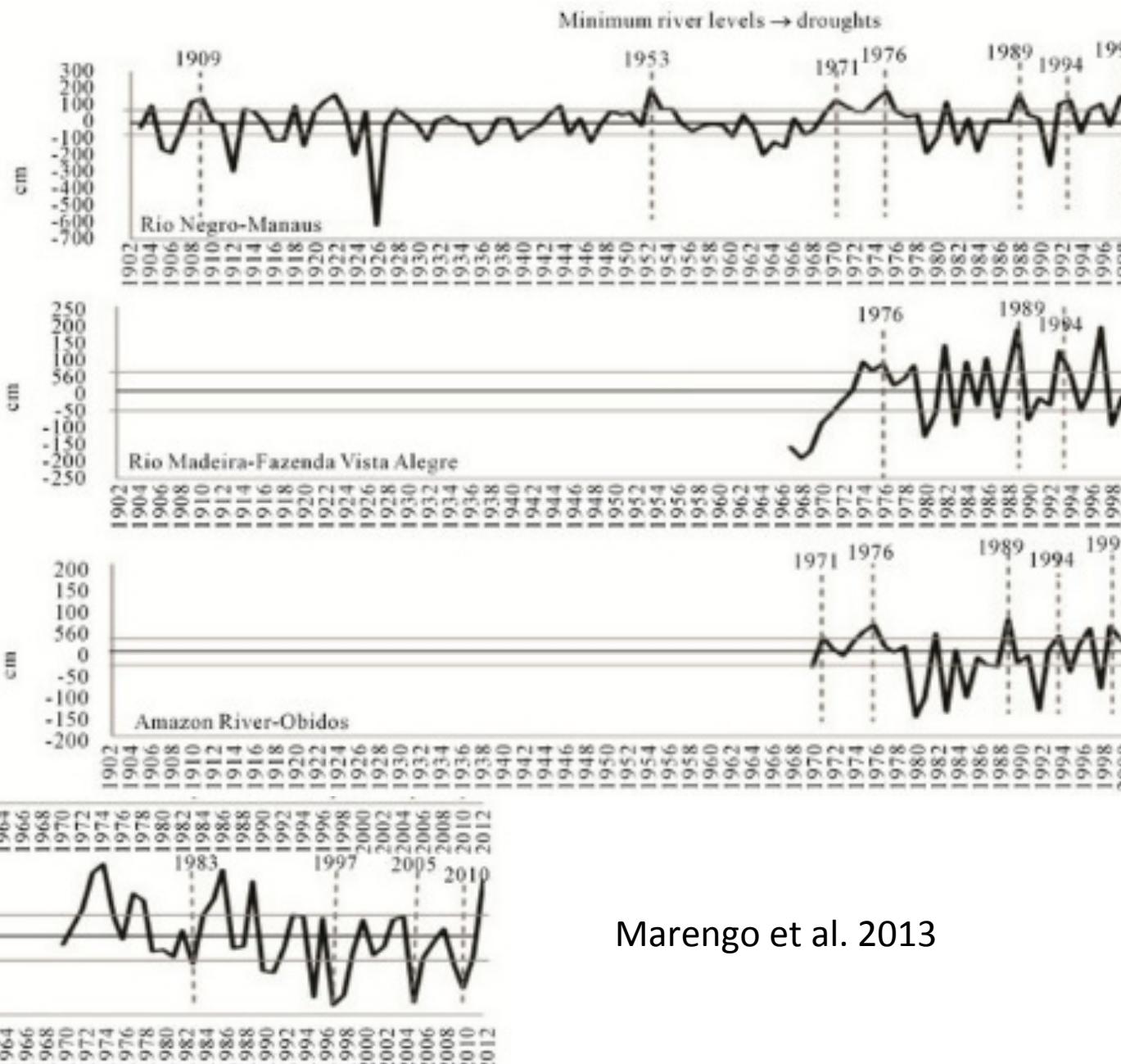
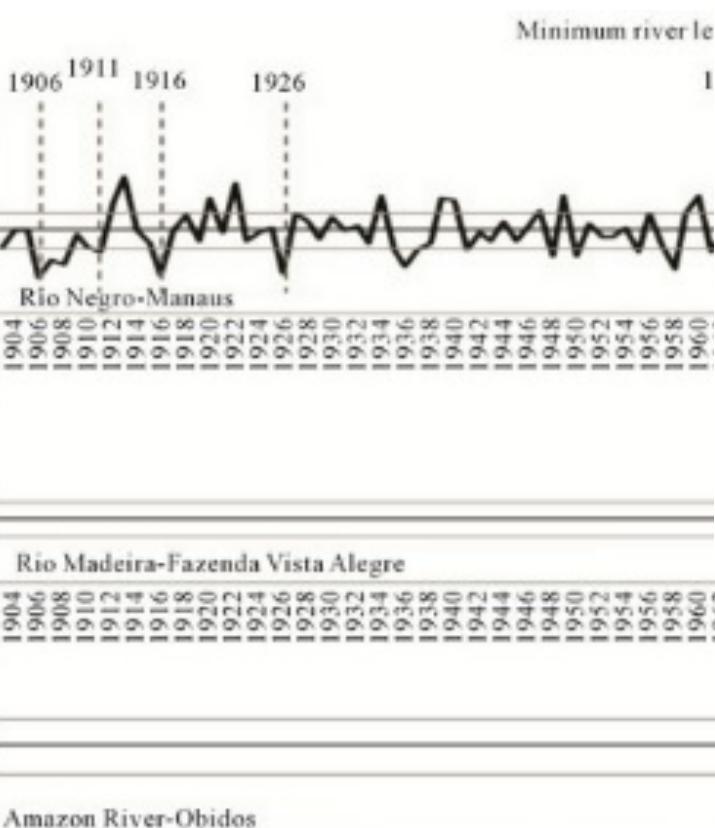


Figure 3 | Decadal and seasonal variation in flood area. The long-term record of simulated interannual variation in percentage deviation from mean flood area (a) illustrates how the ENSO events are superimposed over a 28-year cycle of high- and low-precipitation phases¹⁰⁰. Recurrent seasonal patterns of flooded area (10^3 km^2) for five selected years (b) are superimposed over the interannual variation. Striped bars, La Niña years; stippled bars, El Niño years; solid bars, non-ENSO years.

Davidson et al. 2012

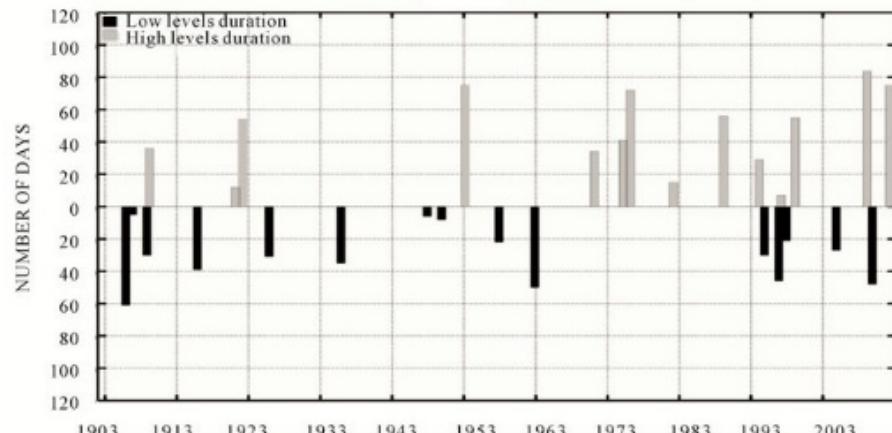
On the ground r

Amazon climate data

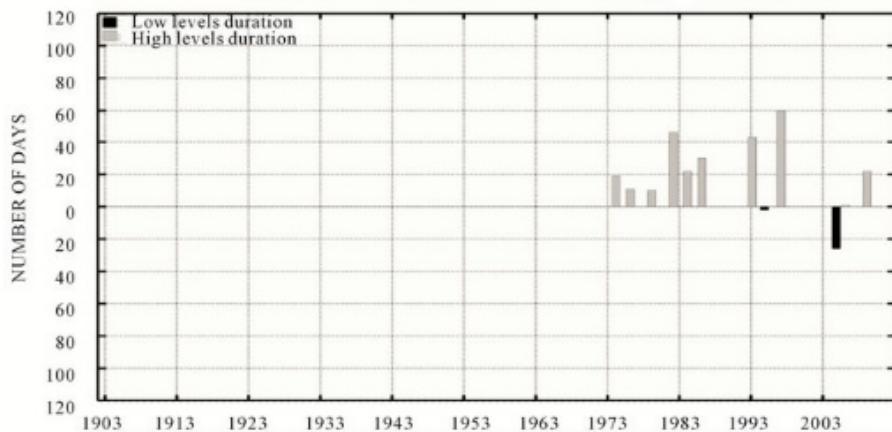


Marengo et al. 2013

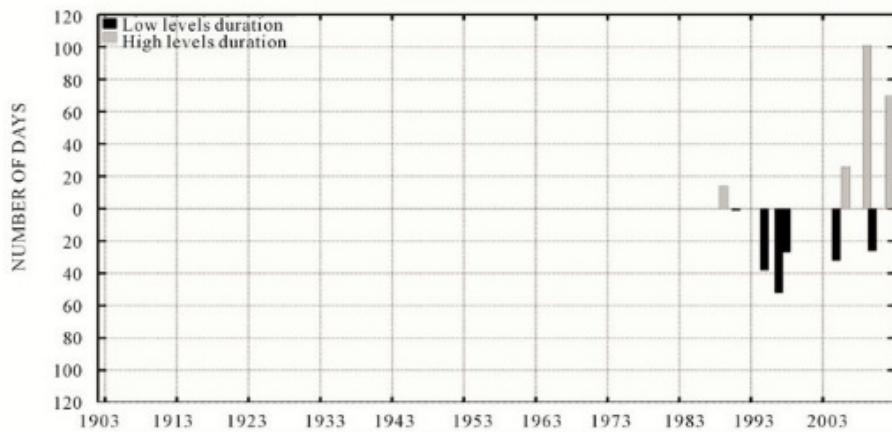
Rio Negro at Manaus



Madeira River at Fazenda Vista Alegre



Amazonas River at Óbidos



Marengo et al. 2013

Is climate change driving Brazil's drought chaos?

2 Shares



Last updated on 18/05/2015, 11:20 am

Experts are divided over the extent of an overheating planet's role in the South American country's chronic dry spell



2014-2015 Brazilian drought

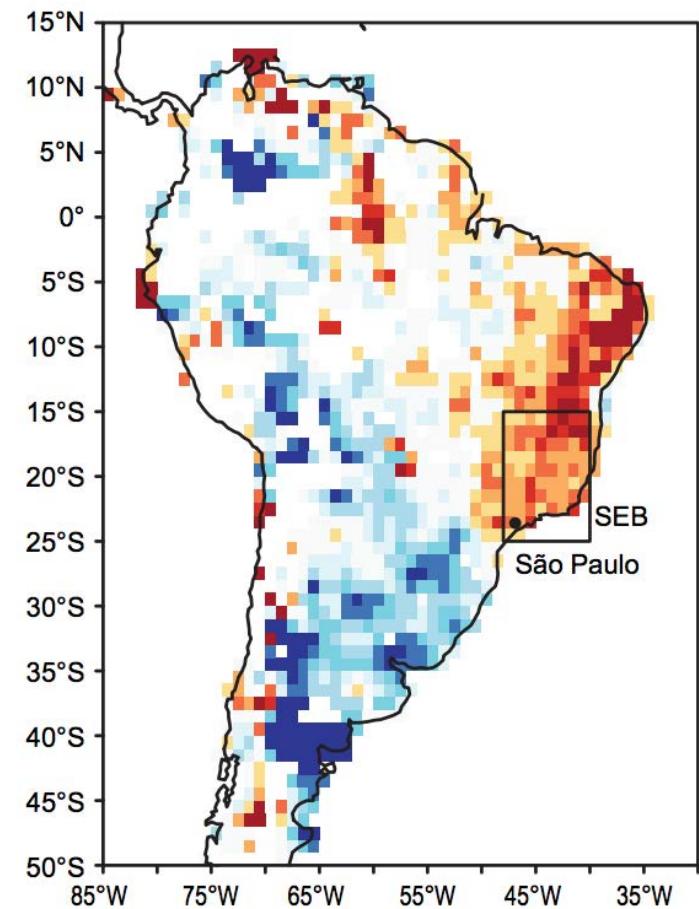
São Paulo, Minas Gerais, Espírito Santo and Rio de Janeiro

Rainy season was less than generous

- Main reservoir in São Paulo operated at 6%
- Large-scale rationing and hoarding

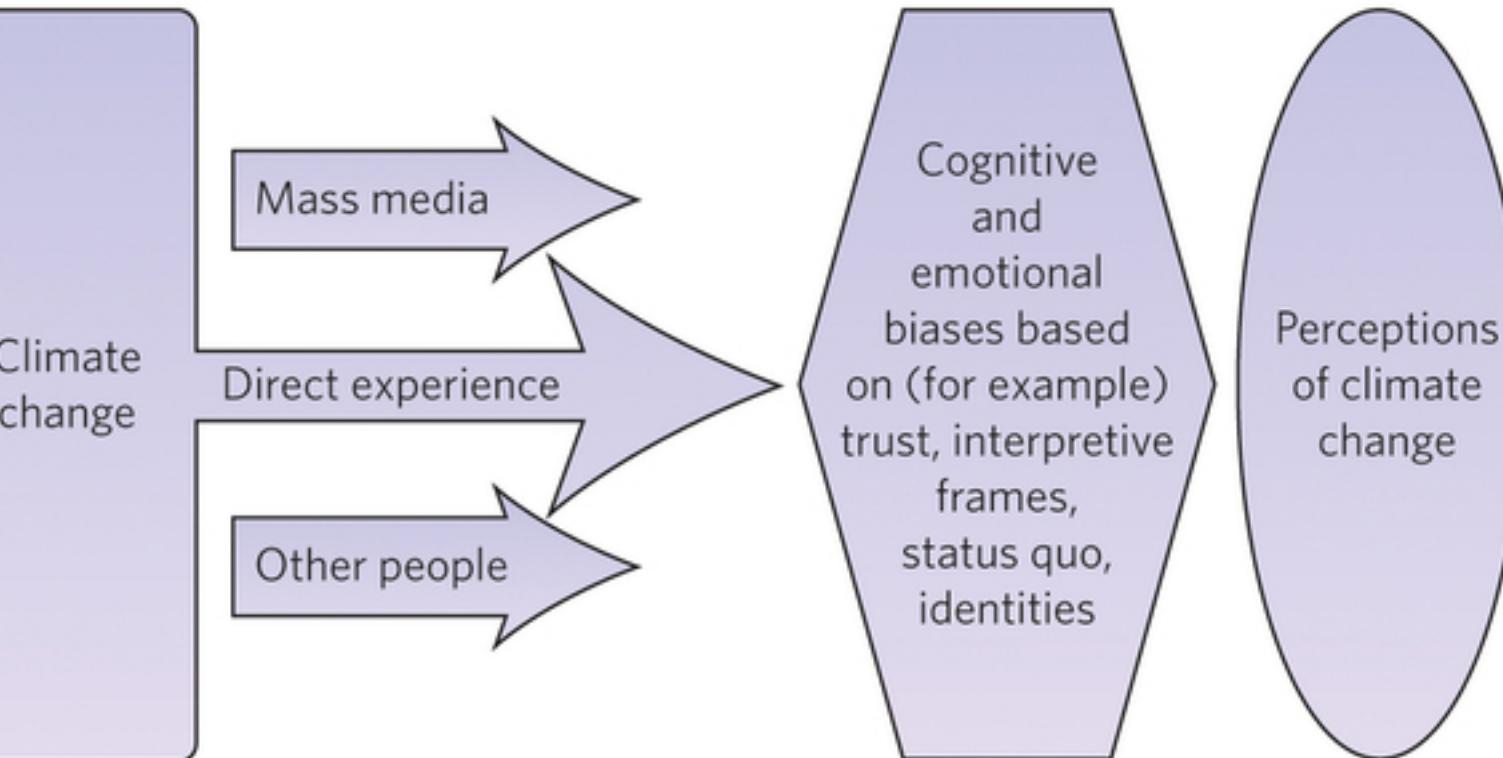
Causes: poor infrastructure, lack of env
protection, political intransigence, and
deforestation

But not climate change



Individual/community perception of climate change

- Disconnects between perception and environmental surroundings



- Cultural theory of risk (Douglas and Wildavsky 1982)
- Cultural cognition of risk (Kahan et al.)

Clayton et al. 2015

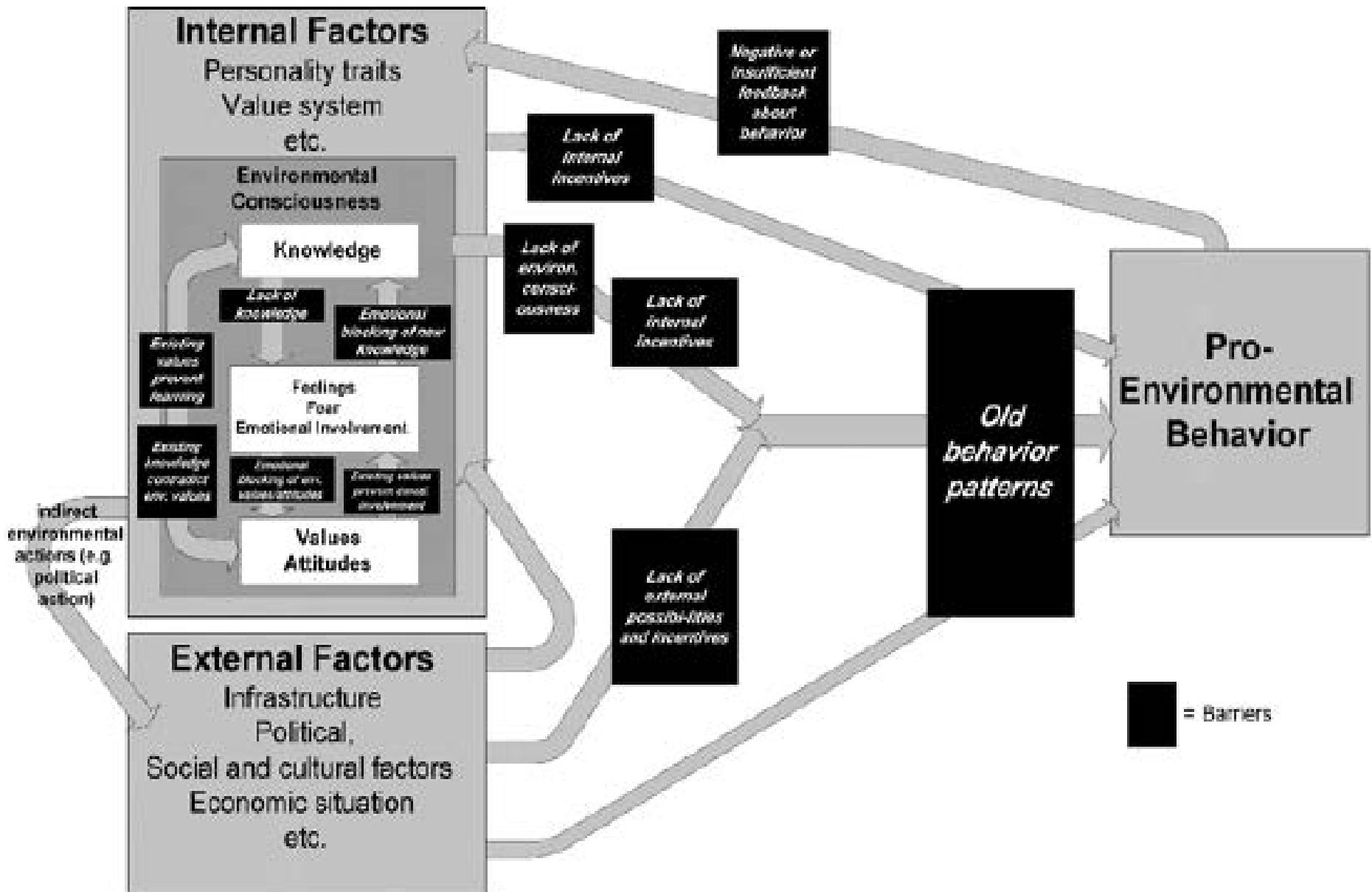


FIG. 7. Model of pro-environmental behaviour (Kollmuss & Agyeman). (2010)

Is 1) perception errant because of how dynamic the system is, 2) because climate change effects cannot be strongly signaled in these environments, or 3) surrounding environment just isn't nearly as salient to people as pre-supposed?

4)...Does it even matter?

Setting

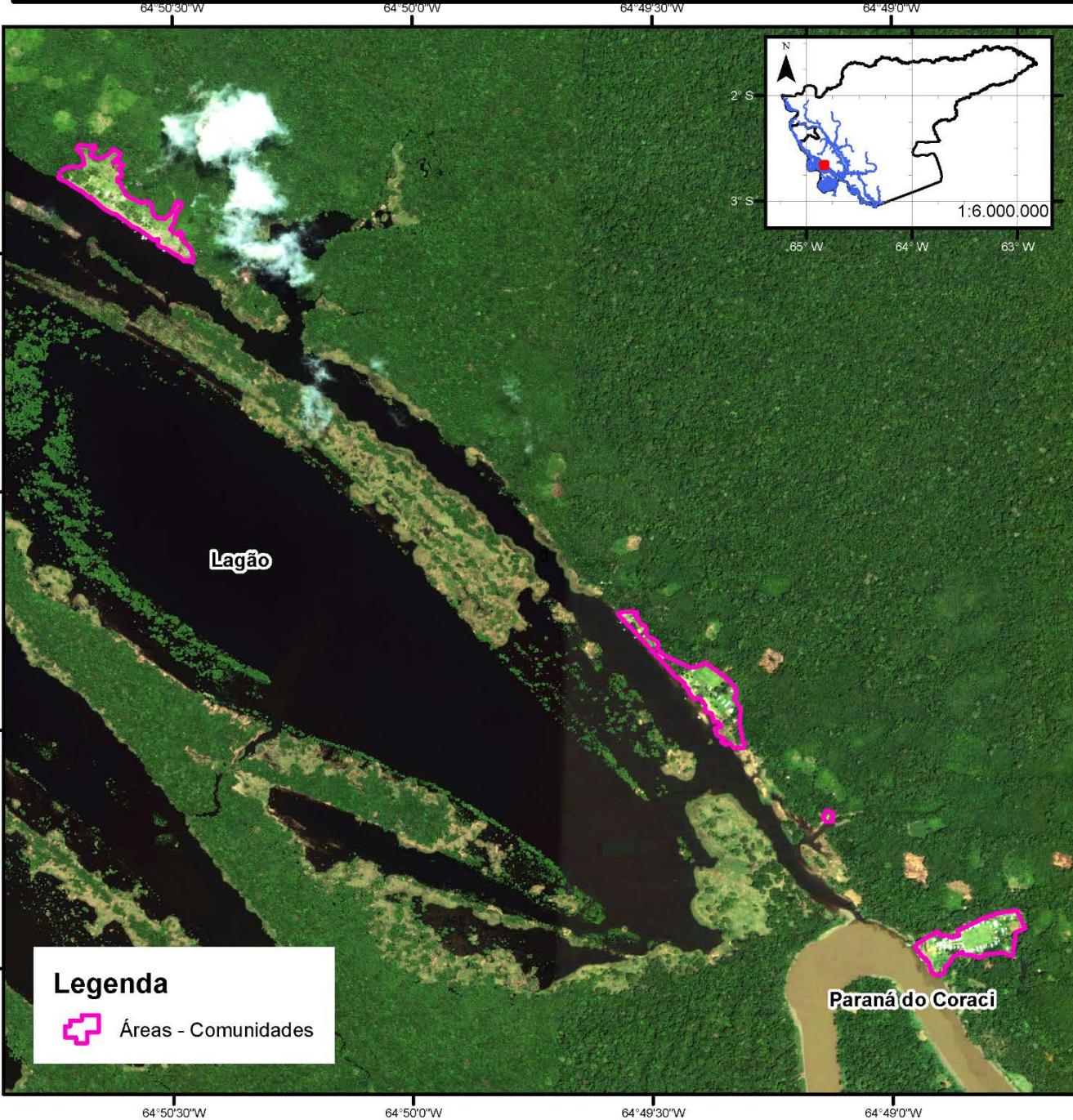
Riverine communities—fishing, farming and government grants

Ribeirinho—multiple lineages, multiple generations

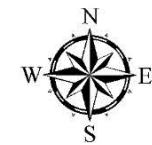
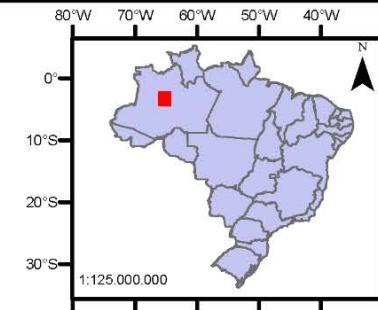
Flux to and from cities and towns

Reserve life

Comunidades - Setor Coraci RDS Amanã



Localização da RDS Amanã



1:22.000

0 0,325 0,65 1,3 km

Localização e área de Assentamento das comunidades
São João do Ipecaú, Matuzalém e Nova Canaã.
Reserva de Desenvolvimento Sustentável Amanã
GP Agricultura Amazônica, Biodiversidade e Manejo Sustentável
Programa de Manejo em Agroecossistemas
Instituto de Desenvolvimento Sustentável Mamirauá

Sistema de Coordenadas Geográficas

Datum: WGS84

Imagen de Satélite: WorldView2

Composição Colorida: Cores naturais:

Bandas R(1) G(2) B(3)

Fonte dos dados: GP em Agricultura Amazônica e

Programa de Manejo em Agroecossistemas

Produzido por: Jéssica dos Santos

Data: Abril de 2015

Instituto de Desenvolvimento
Sustentável Mamirauá

Grupo de Pesquisa em Agricultura Amazônica, Biodiversidade e Manejo Sustentável



Methodology

Interviews in areas with individuals above the age of 65 living in three communities within the Amanã Reserve (n=14)

Review of literature on media, Brazil, and climate change

Media framing assessment of national perceptions of climate change

Policy framing assessments of these phenomena

Interviews



- Three *riberinho* communities in the rural Amazon
- Unstructured and structured interview formats
- Have any environmental changes been observed? If so which
 - When?
 - Tell me about it

Studies assessing climate coverage

Differences between Brazilian and the Anglo-American axis (Oxford Routledge 2014)

Brazilian trend from highly international stories to more domestic coverage (ANDI 2010)

Similar coverage focusing on consumers, but less on the political implications (Lahsen 2009, 2012)

Newspapers/news sites are most influential—but mostly opinion pieces focusing on the economy (2013)

Media framing

emphasis on
emphasis, not on
equivocality

using primarily on
radio, primary news
broadcaster
throughout rural
Brazil

122 stations and
reach 98% of Brazil's
territory

globo.com | g1 | globoesporte | gshow | famosos & etc | vídeos | ASSINE JÁ | CENTRAL | E-MAIL | E-

NEWS

Nunca desliga.

Jornais | Programas | Fale Conosco | Programação | Grupo Globo | |

G1 Dilma decide bloquear R\$ 10 bilhões no Orçamento para sanar rombo nas contas | saiba mais

EXCLUSIVO

DEPOIMENTO DE DELCÍDIO

Senador diz em depoimento que queria Cerveró livre por 'questões humanitárias'. Ele teria se descontrolado ao saber de críticas de Lula

CRISTIANA LÓBO

'Votação aberta cria padrão para outros casos'

Delcídio diz que Temer tinha relação próxima com Zé... | Professor destaca que prisão preventiva é questionável

TIROS NOS EUA | JUSTIÇA FEDERAL | DELCÍDIO | EDSON RIBEIRO | DESVIO DE DINHEIRO

icy framing

political frame
offman 1988,
<hoff 2004)

more rhetorical in
character

less systematic

The screenshot shows the homepage of the Fundação Amazonas Sustentável website. At the top, there is a red oval highlighting the slogan "MAKING FORESTS WORTH MORE STANDING THAN CUT". Below the header, there is a navigation bar with links to FAS, Transparency, Bolsa Floresta, Educação e Saúde, Soluções Inovadoras, Events, Partners, and Contact. The main content area features the "Bolsa Floresta Program" with a sub-navigation menu including Social Actions, Creation and Meaning, Economy of the forest, Community organization, Payment for Environmental Services, Programs to support Bolsa Floresta, and Learn more about the Bolsa Floresta. To the right, there is a "Latest News" section with three news items: "Manaus entra em agenda de Mobilização Mundial pelo Clima", "FAS divulga termo para contratação de analista de projetos especiais", and "Lideranças comunitárias participam de Seminário de Avaliação do Programa Bolsa Floresta". At the bottom right, there is a logo for the Sustainable Development Solutions Network.

FUNDAÇÃO AMAZONAS SUSTENTÁVEL

"MAKING FORESTS WORTH MORE STANDING THAN CUT"

FAS Transparency Bolsa Floresta Educação e Saúde Soluções Inovadoras Events Partners Contact

[Amazonas Sustainable Foundation / Bolsa Floresta Program](#)

Bolsa Floresta Program

» Social Actions » Creation and Meaning » Economy of the forest » Community organization
» Payment for Environmental Services » Programs to support Bolsa Floresta
» Learn more about the Bolsa Floresta

Bolsa Floresta Program

The Bolsa Floresta Program (BFP) is the first internationally certified project in Brazil to reward and improve quality of life of traditional people for the maintenance of environmental services provided by tropical forests, reducing deforestation and enhancing the forest. It has 4 components:

Currently, the BFP is the largest program of Payment for Environmental Services in the world, over 35 thousand people attended in 15 Protected Areas of the State of Amazonas, an area totaling 10 millions of hectares.

[Bolsa Floresta Income](#) – support and motivate sustainable production

[Bolsa Floresta Social](#) - investments in health, education, transportation and communication

[Bolsa Floresta Association](#) – strengthening the association and social control of the program

Latest News

 **Manaus entra em agenda de Mobilização Mundial pelo Clima** 

 **FAS divulga termo para contratação de analista de projetos especiais** 

 **Lideranças comunitárias participam de Seminário de Avaliação do Programa Bolsa Floresta** 
[Read more news](#)

 **SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK**
A GLOBAL INITIATIVE FOR THE UNITED NATIONS
[CLIQUE PARA SABER MAIS](#)

Interview responses

Confusion with the ambit of the question

"I haven't seen anything change around here. The lakes are never filled the same, never on the same day. The pirarucu comes early, sometimes it comes late...I can't really tell you about anything different." (M, 67)

The system is dynamic

"Well, I can't remember if there was a time with few rains, or a time when the river was too low—it moves throughout the whole year. Part of the year you have to canoe to your fields, and the other part of the year you can walk straight through on land. Just watch for the snakes!" (F, 65)

Occasional remembrances, but rarely

"Listen, '91, or maybe '90 (I can't remember), there was this big flood. The floating houses practically floated on top of the trees...Can't remember much more than that, though, sorry." (M, 65)



3 - Atualizado em 07/11/2014 14h54

Anças climáticas são fenômeno global', diz Geraldo Alckmin

'saindo da seca', afirmou governador de SP. sobre prioridades para o interior do Estado.

e Jundiaí

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Notícias **Brasil**

30/10/15 18:40

30/10/15 18:41

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0

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0

Dados da Nasa mostram que seca é pior do que se pensava

Publicidade

Reuters

TORONTO, Canadá (Thomson Reuters Foundation) — Dados de satélite mostraram que a seca no Brasil é pior do que se pensava. O Sudeste perdeu 56 trilhões de litros de água em apenas os últimos três anos, disse um cientista da agência espacial dos Estados Unidos (Nasa) nesta sexta-feira.

A pior seca do país nos últimos 35 anos também teve impacto no Nordeste brasileiro, região maior, mas menos povoada, perdendo 20 trilhões de litros de água a cada ano nos últimos três anos, comparando com os níveis normais, afirmou o hidrologista Augusto Getirana.

Os brasileiros estão bastante conscientes da seca, mas nem sempre entendem seu alcance, disse Getirana.

Bauru e Marília

+

CIÊNCIA

Abelhas “biônicas” vão ajudar a monitorar mudanças climáticas na Amazônia

Microssensores instalados em insetos vão colher dados sobre seu ambiente



EXTRA

FOTO VÍDEO Extra Digital

CAPA NOTÍCIAS POLÍCIA EMPREGO FAMOSOS MULHERES

Notícias Mundo

23/09/14 11:52 23/09/14 11:52

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G+1 0

Dilma promete na ONU apresentar até final do ano plano de adaptação às mudanças climáticas

Publicidade

Reuters

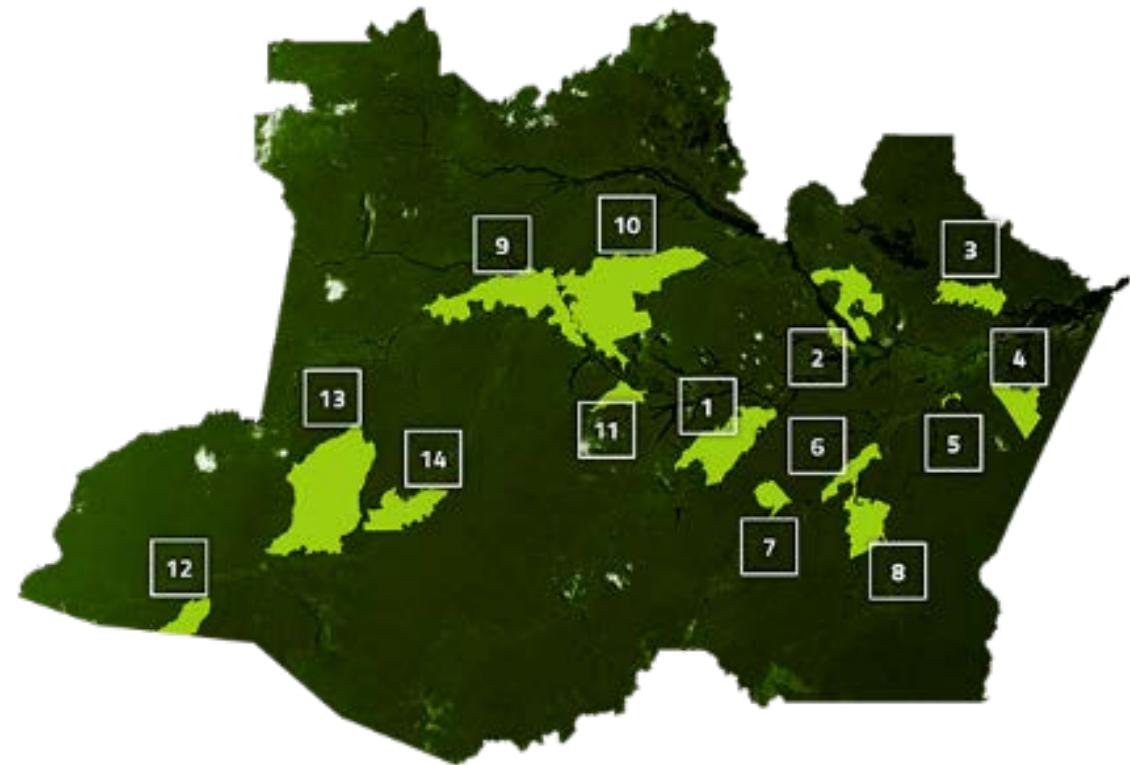
Tamanho do te

(Reuters) - A presidente Dilma Rousseff prometeu nesta terça-feira, em discurso na Cúpula do Clima da Organização das Nações Unidas (ONU), apresentar até o fim do ano o Plano Nacional de Adaptação às mudanças climáticas, e afirmou que os esforços para redução das emissões de gases do efeito estufa devem ser vistos como fonte de riqueza.

"Desastres naturais relacionados às mudanças do clima têm causado danos à vida humana, ameaçado vidas e afetado as atividades econômicas em todo mundo. Neste quadro de injustiça ambiental, as populações pobres são as mais vulneráveis, principalmente nos grandes centros urbanos".

What the world
needs to understand
is that we have done
our housecleaning,
valued the forest as
much as we can,
practiced good practice
and now we need a
response or the
people will end up
pressuring the forest
for survival,"

Amazonas state
governor Eduardo
Braga



1	Associação de Moradores e Entorno da RDS Piagaçú-Purus / AMEPP	8	Associação dos Moradores e Amigos da RDS do Juma / AMARJUMA
2	Associação das Comunidades Sustentáveis do Rio Negro / ASCRN	9	Central de Usuários e Moradores da Reserva Amanã / CAMURA
3	Associação Agroextrativista das Comunidades da RDS Uatumã / AACRODSU	10	Associação dos Moradores e Usuários da Reserva Mamirauá - Antônio Martins / AMURMAM
4	Associação dos Produtores Agroextrativistas da Floresta Estadual de Maués do Rio Parauari / ASPAFEMP	11	Associação Agroextrativista Catuá-Ipixuna / AACI
5	Associação dos Moradores e Usuários da RDS Canumã / AMURDESC	12	Associação dos Moradores Agroextrativistas do Rio Gregório / AMARGE
6	Associação dos Produtores Agroextrativista da RDS do Rio Madeira / APRAMAD	13	Associação dos Extrativistas da RDS Cujubim / AERDSC
7	Central das Associações Agroextrativistas de Democracia / CAAD	14	Associação dos Moradores da RDS Uacari / AMARU



VOCÊ ESTÁ AQUI: PÁGINA INICIAL > INFRAESTRUTURA > 2014 > 12 > HIDRELÉTRICAS CONTRIBUEM NO COMBATE ÀS MUDANÇAS CLIMÁTICAS, APONTA LIVRO

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INFRAESTRUTURA

Hidrelétricas contribuem no combate às mudanças climáticas, aponta livro

[Energia e Meio ambiente](#)

Conclusão é parte da publicação “Emissões de Gases de Efeito Estufa em Reservatórios de Centrais Hidrelétricas”

por Portal Brasil

Publicado: 16/12/2014 18h22

Última modificação: 16/12/2014 18h22

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Itens relacionados

[Brasil relata esforços no combate ao desmatamento](#)

[Produtores serão contemplados com projetos para uso racional da água](#)

Em nota, a Eletrobras informa que parte das usinas hidrelétricas nacionais estão contribuindo para reduzir os níveis de gases de efeito estufa (GEE) na atmosfera.

A conclusão é parte do livro “Emissões de Gases de Efeito Estufa em Reservatórios de Centrais Hidrelétricas”, que consolida os resultados do estudo Balanço do

Guia de Serviços

Consulte serviços públicos de forma fácil

ÚLTIMAS NOTÍCIAS

Moradias do Minha Casa Minha Vida são entregues no Paraná

Novas regras estimulam geração de energia pelos consumidores

Migração de todas as rádios AM para FM deve ocorrer dentro de 4 anos

Santa Catarina receberá R\$ 43,9 milhões do PAC 2

Risco de faltar energia em 2015 é zero, garante Minas e Energia

[ACESSAR MAIS NOTÍCIAS](#)

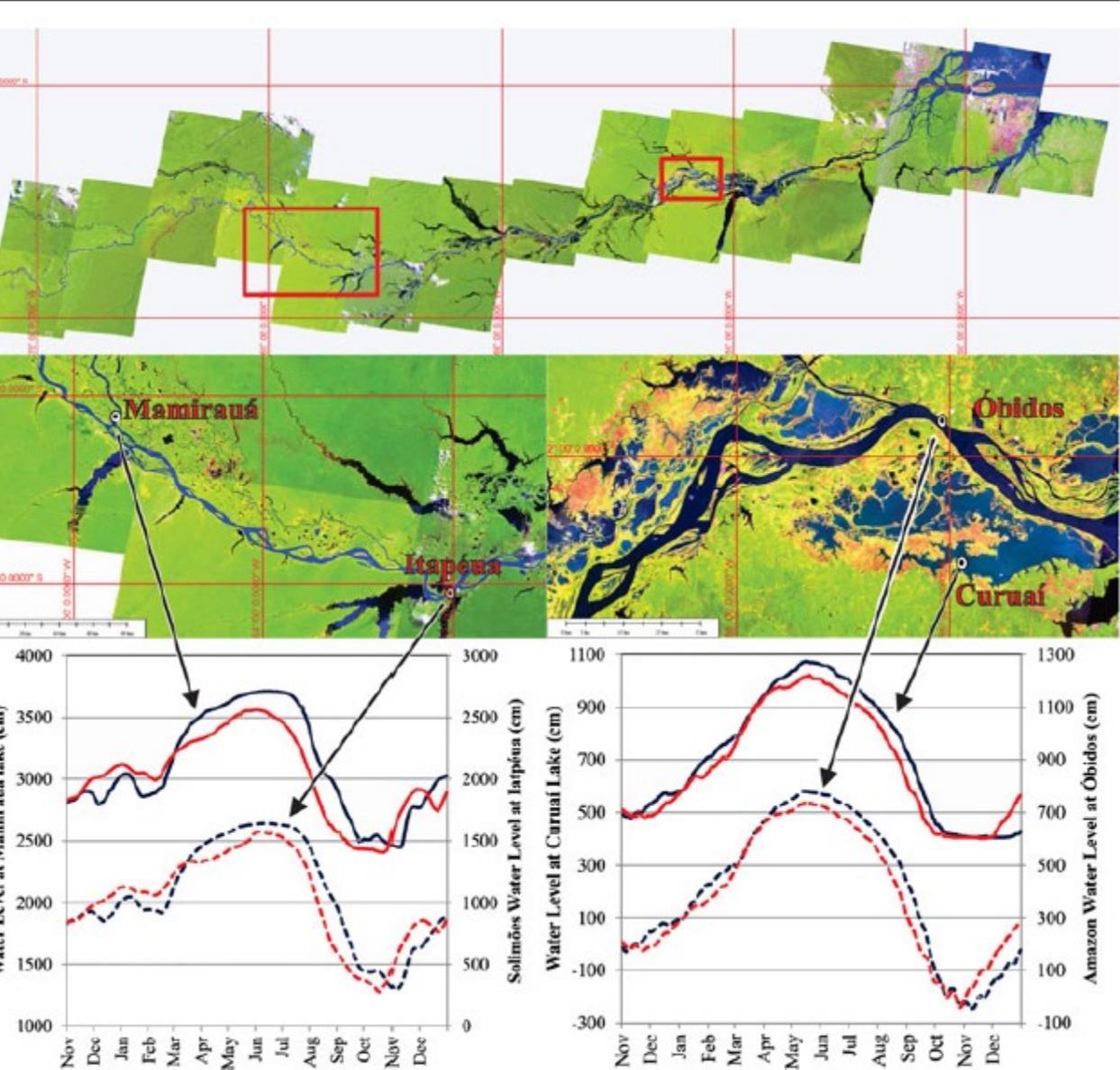


Fig. 2 Landsat mosaic showing the Amazon floodplain (*top*); close-ups of two spots of the floodplain area, with *white circles* indicating the locations of the stations in Mamirauá and Curuáí lakes and the nearby main gauging stations, Itapeuá and Óbidos (*middle*); the *blue lines* correspond to daily variations in water level from November 1996 to December 1997, whereas the *red lines* correspond to November 2004 through December 2005; *continuous lines* indicate the water levels of the floodplain lakes and the *dotted lines* are the water levels of the main stem (*bottom graphs*)

- Interviews and coding from responses of these interviews
- Perceptions of change
- Comport with biophysical results?

Tomasella et al. 2012



AVISO NOVO Avanço: Detecção agora com resolução de 3/5m do sensor VIIRS / Satelite NPP



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- [Risco de Fogo / Meteorol.](#)
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Situação Atual

Dados do período de 2015/11/27 00:00:00 até 2015/11/28 01:24:03 (TMG)

X Nuvens Risco de Fogo Fumaça Vegetação Img Modis Img TM

Por favor, aguarde para que a imagem seja carregada.



• GOES-13 • NPP • NPP_375 • AQUA_M-M • AQUA_M-T • TERRA_M-M • MSG
• TERRA_M-T • NOAA-15 • NOAA-19D • NOAA-19 • NOAA-18 • NOAA-18D

Regiões Brasil Américas

Para ampliar a imagem, selecione o setor desejado.



Veja estes focos no Google Earth

DADOS: APENAS SATÉLITE DE REFERÊNCIA - AQUA TARDE

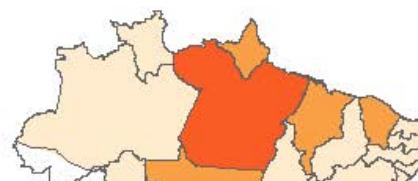
NÚMERO DE FOCOS POR PAÍS

Mapa 48 Horas



NÚMERO DE FOCOS POR ESTADO

Mapa 48 Horas





Deforestation jumped 16 percent in the Brazilian Amazon to 5,831 square kilometers for the year ended July 31, 2015,

Let's talk with Joaquim again



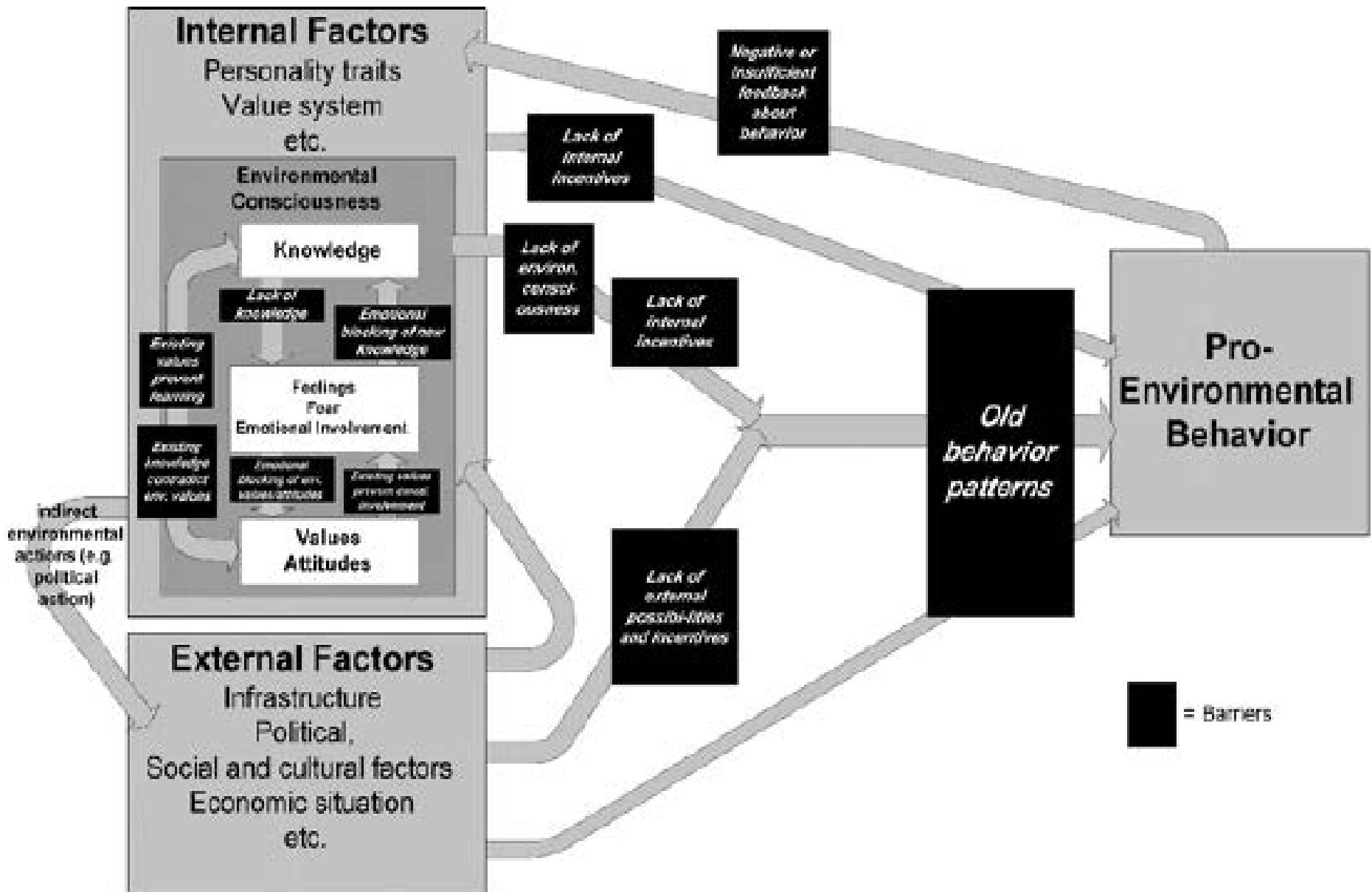
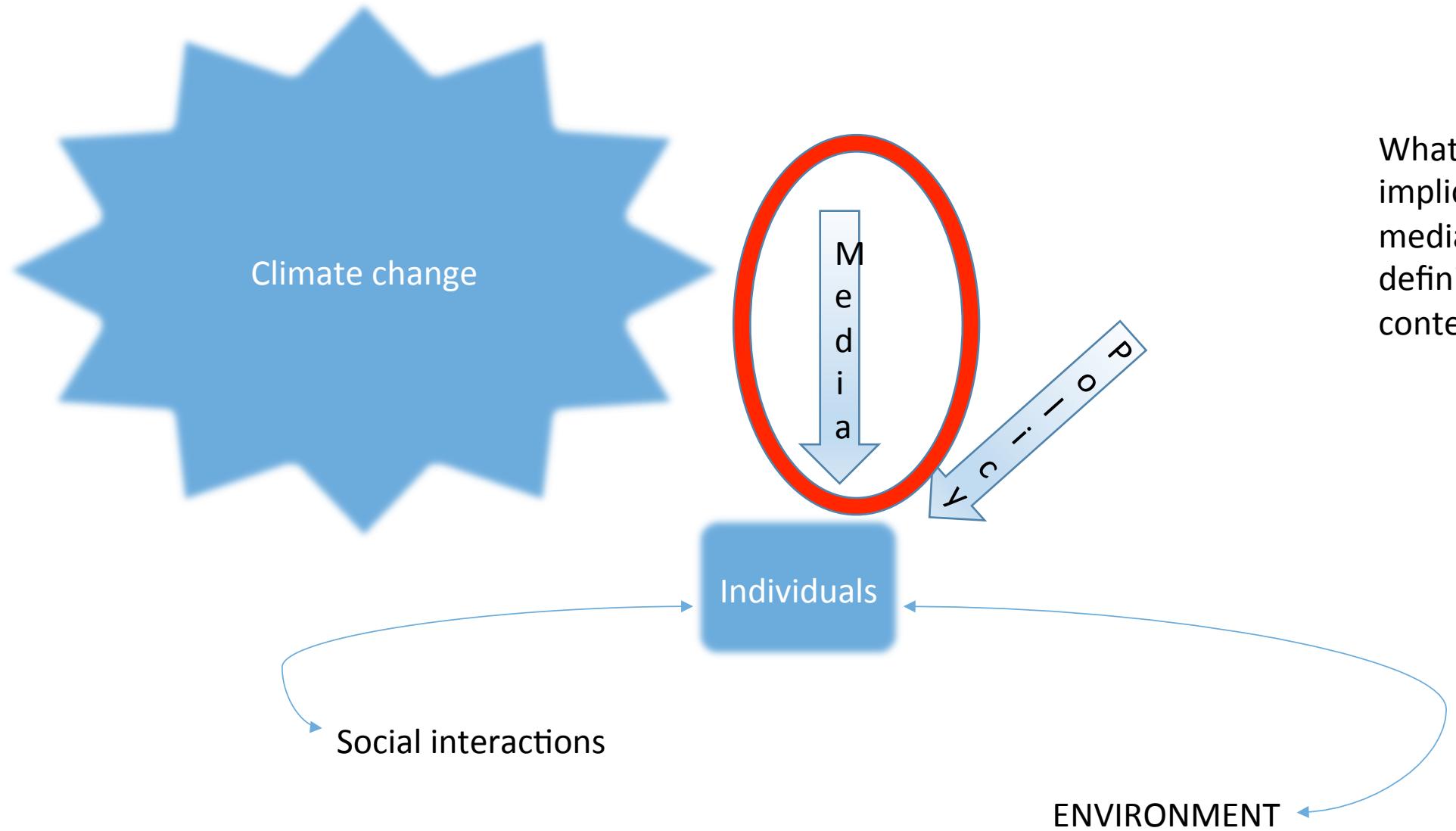


FIG. 7. Model of pro-environmental behaviour (Kollmuss & Agyeman).



What are the implications media is defining the context?

Limitations

Is the Central Amazon, or any part of the basin an ideal study area?

Study size with primary sources

Amount of secondary analysis

Quantification of perception

Could this change with a few alterations within people's social networks?

Is policy really *so* removed from a science that is both impactful and salient to those affected?