Christiane Stephan

Living with floods

Social practices and transformations of flood management in Chiapas, Mexico

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LIST OF ABBREVIATIONS

Abbreviation	Original Term	Translation of Spanish terms to English
BID	Banco Interamericano de Desarrollo	Inter-American Development Bank
CADA	Campaña por la Desmilitarización de las Américas	Campaign for the Demilitarisation of the Americas
CDM	Clean Development Mechanism	
CENAPRED	Centro Nacional de Prevención de Desastres	National Centre for Disaster Prevention
CIASI	Comisión Intersecretarial para la Atención de Sequías e Inundaciones	Intersecretarial Commission for Adressing Droughts and Floods
CICC	Comisión Interministerial de Cambio Climatico	Inter-Ministerial Climate Change Commission
CIESAS	Centro de Investigaciones y Estudios Superiores en Antropología Social	Centre for Research and Superior Studies in Social Anthropology
CFE	Comisión Federal de Electricidad	Federal Commission of Electricity
CONAGUA	Comisión Nacional del Agua	National Water Commission
CONEVAL	National Council of Evaluation of the Politics of Social Development	Consejo Nacional de Evaluación de la Política de Desarrollo Social
DFID	Department for International Development	
DGV	Deutsche Gesellschaft für Völkerkunde	German Society for Ethnology
DIF	Sistema Nacional del Desarrollo Integral de la Familia	National System of Integrative Development of the Family
DRM	Disaster Risk Management	
DRR	Disaster Risk Reduction	
Eco-DRR	Ecosystem-based Disaster Risk Reduction	
ECOSUR	El Colegio de la Frontera Sur	
EZLN	Ejercito Zapatista de la Liberación Nacional	Zapatista National Liberation Army
FONDEN	Fondo Nacional de Desastres Naturales	Fund for National Disasters
FOPREDEN	Fondo de Prevención de Desastres	Fund for Disaster Prevention
GIS	Geographical Information System	

Abbreviation	Original Term	Translation of Spanish terms to English
GPDRR	Global Platform for Disaster Risk Reduction	
HFA	Hyogo Framework for Action	
IFRC	International Federation of Red Cross and Red Crescent Societies	
IIASA	Institute for Applied Systems Analysis	
INGO	International Non-Governmental Organisation	
INAI	Instituto Nacional de Transparencia, Acceso a la Información y Protección de Datos Personales	National Institute for Transparency, Information Access and Data Protection
IPCC	Intergovernmental Panel on Climate Change	
LGCC	Ley General del Cambio Climatico	General Climate Change Law
LGPC	Ley General de Protección Civil	General Law of Civil Protection
MCEER	Multidisciplinary Center for Earthquake Engineering Research	
NGO	Non-Governmental Organisation	
OMC	Otros Mundos Chiapas	Other Worlds Chiapas
PAOM	Plan de Adaptación, Ordenamiento y Manejo integral de las cuencas de los ríos Grijalva y Usumacinta	Plan for Integrated Adaptation, Planning and Management of the basis for the rivers Grijalva and Usumacinta
PAR	Pressure and Release Model	
PEMEX	Petróleos Mexicanos	Mexican Petrols
PNI	Programa Nacional de Infraestructura	National Infrastructure Programme
PRI	Partido Revolucionario Institucional	Revolutionary Institutional Party
RECOMA	Red Latinoamericana contra los Monocultivos de Arboles	Latin American Network against monoculture of trees
REDLAR	Red Latinoamericana contra las Presas y en Defensa de los Ríos, sus Comunidades y el Agua	Latin American Network against dams and in defence of the rivers, their communities and water
RETOS	La Red Trasnacional Otros Saberes	Transnational Network of the Other Knowledges
RICAM	Red Internacional de Carreteras en América Central	International Network of Highways in Central America
SDGs	Sustainable Development Goals	

Abbreviation	Original Term	Translation of Spanish terms to English
SFDRR	Sendai Framework for Disaster Risk Reduction	
SINAPROC	Sistema Nacional de Protección Civil	National Civil Protection System
SIEPAC	Sistema de Interconexión Eléctrica de los Países de América Central	System of Electric Interconnection of Central American Countries
UNAM	Universidad Nacional Autónoma de México	National Autonomous University of Mexico
UNISDR	United Nations International Strategy for Disaster Reduction	United Nations International Secretary for Disaster Reduction
UNU-EHS	United Nations University - Institute of Environmental and Human Security	
VCA	Vulnerability and Capacity Assessment	

SUMMARY

People around the globe deal with floods in various ways and evaluate flood risk and other risks based on general patterns they experience as part of their everyday lives. In the South of Mexico, floods along the river Usumacinta take place on a regular basis and interact with temporal and spatial dynamics in a complex socio-ecological system. Descriptions by people from villages along the Lower Usumacinta in Chiapas are manifold and represent highly ambivalent perceptions. Flooding is evaluated as a positive and at the same time negative dynamic in the cyclic pattern of social life. Perceptions and evaluations of floods along the Usumacinta influence options for flood management and long-term Disaster Risk Reduction as they form part of the social practices that make up flood management. These practices involve not only local people but connect different actors at different geographic scales who in different ways shape the conditions for the ways floods are managed.

In the state of Chiapas in the South of Mexico, flood management is a pressing issue given the fact that various processes of the physical environment and the socio-ecological systems interconnect. Processes of global climate change which are discussed to increase extreme rainfall events in the future and the effects of the *El Niño* phenomenon which may lead to both an increase in droughts as well as in floods shape hydrological conditions in the case study region (Landa et al. 2008: 13; IPCC 2001: 54). At the same time, a range of pressing social and political dynamics define and influence floods and flood management in the region. While climate change underlines the need for concerted action in disaster management on different geographic and administrative scales, flood events are currently approached in disaster risk science in a range of different and sometimes conflicting ways. Approaches informed mainly by natural sciences conceptualise risk as an objective entity and present quantitative methods for risk analysis based on probabilistic models (Bedford & Cooke 2001; Calvi et al. 2006). In contrast, a variety of social science disciplines put human activity at the centre of risk processes and the emergence of disasters (Renn 2008: 54f; Egner & Pott 2010a).

In a socio-cultural tradition of disaster risk science, this study understands flood risk as a result of societal construction and decision making. Based on foundations of social geography, the study tries to build an understanding of socio-spatial patterns of human activity through linking complex patterns of social life with relevant dynamics in the physical environment. This perspective entails a review of dominant concepts in disaster risk science and of locally used conceptualisations of floods, risks and disasters from Mexico. Investigating floods in this way requires involving local perspectives and conceptualisations of floods and most importantly, the multiple social practices that are created and performed around and as part of

flood phenomena. Understanding floods as social phenomena with specific spatial relevance is accomplished using a specific version of social practice theory. The work of Theodore Schatzki (i.a. 2001b, 2002, 2003, 2011) allows the conceptualisation of social practices in a flat ontology of the social and describes, how practices are constituted mentally, bodily and materially. Linking social practice theory with Lefebvre´s (1991) conceptualisations of space a specific conceptual and analytical approach is chosen. Building on the *riskscapes* concept presented in social geography by Müller-Mahn and Everts (2013), this study develops one version of a *riskscape* conceptualisation that accounts for the complex and interwoven character of flood related social practices.

The methodology designed for empirically studying social practices of flood management in Mexico, is informed by ethnomethodology and audio-visual methods in qualitative research. Based on grounded theory and influenced by two "alternative" epistemologies, field research gives an active role to research partners from case study villages and to a co-researcher from Chiapas, thereby integrating local conceptualisations and performances in a dialectic process of conceptual and empirical work. Empirical research carried out in a period of nine months in 2014 and 2015 involved in-depth qualitative research in selected case study villages in the municipalities Catazajá and Palenque in the North of Chiapas. In addition, qualitative interviews were carried out with other actors relevant for flood management and its larger context in the South of Mexico, among them representatives of civil protection, government agencies, NGOs and research institutions. The different actors involved in this research are selected in their relevance as carriers of specific practices that form part of flood management, which allows the identification of a complex pattern of interrelated performances. The use of audio-visual methods, especially participatory photography and video workshops carried out in rural settlements along the river Usumacinta, provides novel information on the characteristics and dynamics of social practices. The visual as a highly sensitive medium for patterns in the material world, presents how material objects "tell a story" about the social practices which they are or have in the past been part of and might be in the future. The visual medium allows the analysis of different temporal dimensions which coexist in the physical world in the present. Visual methods are presented in this study as an important component of qualitative social research, that equip social geography with an additional approach to enquire questions of materiality and embodiment of human activity in spatial settings.

As a result of this study patterns of social practices in flood management are presented, which are of relevance within and beyond the case study region. Linking empirical results with social practice theory in the *riskscape* approach enables to focus not on the actors primarily but on the practices performed. Practices of living with the flood and practices of anticipation that are identified in case study villages can be contrasted to practices performed by external actors like those that try to transfer knowledge on floods, introduce a development discourse or change local patterns of preferences and behaviour. The specific *riskscape* approach developed in this study provides the necessary analytical view to identify specific types of interactions between social practices. Diverse types of interrelations between social

practices are explored, while the types of interaction range from co-existence and support to conflict and competition. As the empirical example of a projected dam on the Usumacinta shows, different types of interrelations between social practices show different spatial repercussions and beyond current consequences carry along additional repercussions in the near or far future. The analysis of interrelations of social practices are relevant both conceptually as well as practically. On the one hand, the empirical results provide information on which a more in-depth understanding of social practices can be developed. On the other hand, underlying conflicts, negotiations and capacities are identified that influence flood management and other spatially relevant phenomena in the case study region. Making changing patterns of relations between social practices and the transformation of discourses in flood management visible, this thesis provides detailed insight into ongoing processes of social transformation in the South of Mexico. These processes reconnect to and reflect dynamics that foster social inequalities on a global scale, among them processes of promoting discourses of development and technological modernisation. Presenting scientific analysis of the socio-spatial practices that guide social transformation, the study tries to provide one part of an analytical and methodological perspective and apparatus, which is regarded necessary to elaborate more sustainable practices of flood management in the future.

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PROLOGUE

Agua de las primeras aguas, tan remota,
que al recordarla tiemblan los helechos
cuando la mano de la orilla frota
la soledad de los antiguos trechos.

Y éste es el canto del Usumacinta
que viene de muy allá
y al que acompañan, desde hace siglos, dando la vida,
el Lakantún y el Lakanjá.

Excerpt from “El canto del Usumacinta”
by Carlos Pellicer, May 9th, 1947

Water of the first waters, so remote,
that remembering them, the ferns start to tremble
when the river bank rubs his hands
on the solitude of the old stretches.

And this is the song of the Usumacinta
which comes from far away
and whom accompany, since centuries, giving life,
the Lakantún and the Lakanjá.

[own translation]

1 INTRODUCTION

People around the globe deal with floods in a variety of ways. While some people who live in flood prone areas take decisions to leave their settlements, others decide to or have to stay in a flood-prone area and deal with floods as part of their everyday lives. “Waters that come, waters that go”. While this description of a flood may appear simple, it introduces one way in which locals in the South of Mexico have described floods for centuries. Floods are studied in different scientific disciplines with a focus on the hydrological dynamics they entail (Brown 2016; Pedrozo-Acuña et al. 2014; Kundzewicz et al. 2013). However, floods are understood here as complex social-ecological dynamics, which involve different processes of the physical environment and the human and non-human beings who live and interact within it. In this thesis floods are approached from a social geographic perspective that places flood dynamics within a myriad of human performances. One relevant dynamic is flood management, a pattern of social practices performed by different groups of people, among them inhabitants of flood-prone areas, civil protection staff and government representatives. Looking into flood management from a social geographic perspective not only enables to learn about a natural phenomenon and human-nature interaction but it also gives insight into constructions of reality, into social interactions and into constructions and reproductions of material and immaterial spatialities. While as a researcher in social geography I am interested in understanding social patterns of human activity, it is relevant to connect patterns of social life with relevant dynamics in the physical environment. It is for this reason that floods are studied here as social patterns which link and interact with global socio-ecological dynamics.

The relevance to study flood management can be underlined by processes of global prevalence discussed in different scientific disciplines: Climate change is argued to be likely to increase flood risk in selected world regions through the increase in extreme rainfall events in the future (IPCC 2001: 29). In the South of Mexico, it is especially the effects of the *El Niño* phenomenon (ENSO= El Niño Southern Oscillation) which may lead to both an increase in droughts as well as in tropical storms and extreme precipitation events followed by floods (Landa et al. 2008: 13; IPCC 2001: 54). While processes of climate change show the need for concerted action of disaster prevention on different geographic scales, flood events are approached in disaster risk science in a range of different ways. Approaches informed mainly by the natural sciences conceptualise risk as an objective entity, to be measured and calculated with quantitative methods and expressed in probabilistic models (Bedford & Cooke 2001; Calvi et al. 2006). In some accounts of natural science, a flood is characterised as a hazard that has its origin in physical processes and it is argued that these physical dynamics impact the lives of humans (Smith & Ward 1998). In contrast, a variety of other scientific disciplines have

identified human activity as playing the central role in the generation of risk and the emergence of disasters, among them psychology as well social science disciplines and geography (Renn 2008; Egner & Pott 2010a). Social science and human geography perspectives describe a social construction of risk and largely detach enquiries on risk from objectivist approaches (Weichselgartner 2001). Flood dynamics in this sense are understood as a part of social processes that involve decision making based on aspects like perception, values and needs (Ibid: 64, 110).

The overview on risk perspectives brings up the following question: If floods are embedded in such complex social processes, how can we as researchers account for them in an adequate manner? One possible approach is represented in social practice theory as this line of theory provides relevant conceptual linkages from flood events on one side towards practical activities and on the other side towards larger social dynamics including inequalities in access to flood management resources. Practice theory initially entered social geographic research mainly through the work of Pierre Bourdieu who made important contributions to the conceptualisation of the linkages between social structures and spatial relations and the ways in which human activity is part of larger societal structures (Etzold 2014: 38). In this thesis, conceptualisations made by Theodore Schatzki (i.a. 2001, 2002) on social practices and their constitution through and as part of *the social* are used in order to look into flood related dynamics. His version of a conceptualisation of social practices enables to identify major performances and local conceptualisations relevant for and in flood management. Based on an analytical approach derived from this theory I argue that it is relevant for research on floods to recognise and represent water, land, human beings and animals as more than variables in an equation of flood risk. These entities are closely tied to each other through the social practices of human beings, among which we have to identify mental and bodily performances of humans, abstract concepts and tangible materilities as well as social and ecological processes.

It is believed to be highly relevant for social geography to investigate floods and social practices in a rural area in Chiapas in the South of Mexico. Relevance is stated for a number of reasons: The empirical analysis of social practices of flood management in the study region helps to understand and refine general conceptual features of social practices and practice patterns. Moreover, it can be recognised that floods are no phenomena to be regarded independently from other phenomena and social dynamics. Therefore, floods and flood related social practices can point research towards general patterns of social life in which they are embedded. The Mexican case reveals dynamics which are specific to the case study region or the socio-cultural, political and even physical-geographic context of Southern Mexico. It thereby gives a detailed insight into a geographic region for which only few scientific accounts on the social and ecologic processes in a historical overview are found (Wilkerson 1991; Scherer & Golden 2012). Furthermore, the case study reveals patterns of social practices which link different geographic scales, different world regions and different temporalities. It is in the Mexican case that reflections of globally relevant social practices can be recognised, including global projects for economic and infrastructural development and dominant discourses, among them

risk discourses. The reader of this thesis is invited to follow the analysis of how these practices are informed by and reproduced in different groups of people, thereby forming what are called *riskscapes*. The *riskscapes* of flood management, namely the socio-spatial dynamics of flood and risk related social practices, help to understand socially and spatially relevant inequalities and to deconstruct inherent conceptualisations of risk and flood.

Given the amount of works published on floods from social science and related scientific fields, it is relevant to argue what new insights can be expected from this thesis. It is acknowledged that relevant conceptual and empirical contributions have been presented by a range of scholars in the last 15 years (i.a. Crate 2011; Krause 2016; Oslender 2002; Rohland et al. 2014). These works underline that there is a lack of analysis which serves academia, practitioners and local people alike. What is needed are publications that result from long-term engagement with local people in flood-prone areas and at the same time involve processes of collective research and collective practical action. This study intends to contribute to an ongoing broadening of conceptual and methodological horizons through a specific way of thinking and doing research. It is a way in which people´s everyday practices in dealing with floods are addressed through a qualitative approach that gives a strong role to visual and audio-visual methods. The design of methodology follows two major purposes which are interlinked. In the use of visual methods, it is possible (1) to incorporate people actively into the creation of empirical material for the research process, e.g. through participatory workshops and processes of reflection on and representation of visual material and (2) to produce a large set of visual empirical information to be included in the analysis of social practices which complements and extends other sets of empirical data. The interpretation of visual material demands procedures of analysis – in this case the documentary method – which have not been broadly used in human geography yet, but are worthwhile exploring. In the visual approach, the researcher included local people from the case study villages as well as a co-researcher from Chiapas. This provided a unique option for active interaction between all involved partners. Moreover, producing pictures and videos with a camera allows researchers and research participants to express thoughts, research questions and perceptions in a different language than the languages of spoken and written text. Reflections stimulated from these collective processes of video and photography production and their revision are invaluable for this study and the long-term relationship between all involved research partners from Mexico and Germany.

The partly unconventional conceptual and methodological approaches chosen are closely connected to the main motivations and objectives I follow in this study: The main motivation to carry out a doctoral thesis on flood phenomena in the South of Mexico has been to learn about floods from people who experience them on a regular basis. Believing that people develop conceptualisations as part of their daily lives stimulated the decision to carry out research among flood-affected people. This aspect is linked to the motivation of supporting processes of self-reflection and awareness raising among local people in Chiapas on various socio-spatial patterns and transformations that take place in the case study region. Research can serve to

reflect on processes that people are aware of but which they have not exchanged information on in a communicative process. Reflection takes place in a bi-directional way: the researcher offers a different view into the lives of research partners upon which they can reflect and vice versa the research partners provide views that help the researcher to reflect on her research question, academic processes and life (personal communication Leyva Solano 07.08.2014, Field notebook 1/2014). In this research, "mirroring" as the process is called by Mexican social anthropologists (Ibid) provides the option to make explicit those inequalities perceived by research partners and to support social practices of transformation that can be of use to reduce inequalities. Understanding the field of human geography as a space not only for academic research but for active involvement in knowledge production, representation and social transformation, this thesis can hopefully make a small contribution to make a step from knowledge and understanding towards sustainable social transformation. It is believed that it is not only the inhabitants of case study villages who can benefit from the research results and interactions initiated throughout field research. Moreover, the different actors from the South of Mexico addressed in this research, among them civil protection on regional and state level in Chiapas, municipal governments, research institutions and NGOs as well as INGOs are invited to continue the trustful interaction with the researcher in order to improve flood management along the Usumacinta River. Based on the motivations and objectives, I suggest that quality and relevance of this thesis may be evaluated by scientific criteria as well as through requesting the social relevance of the research presented.

This thesis is divided into ten chapters. While *chapter 1* introduces the study and its relevance as accomplished in the paragraphs above, *chapter 2* describes the research problem of this thesis and develops the research questions. The principle features of floods and flood risk management in Mexico and in the state of Chiapas are presented, deriving specific points of interest by the author as well as critical aspects that make a social geographic investigation relevant. The points of entry into the specific research problem and interest are thereafter developed in the formulation of a major research question. This main question is subsequently broken down into sub-questions that help to underline the specific focus of this thesis and to operationalise conceptual ideas into the empirical approach.

Chapter 3 introduces the case study region by means of a historical overview of selected socio-spatial dynamics in Chiapas and Mexico. This overview charts major processes since early Mayan settlement in the Usumacinta region until today, while among a large amount of historical processes those events and processes are selected which are regarded to be of relevance for current flood management. A focus is set on population dynamics in the South of Mexico, processes of economic exploitation of natural resources and labour along the river Usumacinta and adjacent lands during colonial times and major political events like the Mexican Revolution and Agrarian Reforms as these processes have fundamentally influenced the socio-spatial patterns and challenges we find in the case study region today.

Chapter 4 lays the theoretical basis of this thesis. It presents the paradigmatic and epistemological basis of this thesis and introduces the three main strands of theory

used to approach flood phenomena. Social practice theory is presented as the principal theoretical basis among which the work of Theodore Schatzki is chosen to guide the theoretical examination of flood related human action. This is complemented by risk theory among which social science perspectives are underlined and theories of space, most especially the triadic conceptualisations coined by Henri Lefebvre (1991). The chapter concludes by weaving together the three theoretical lines into a specific concept of use to analyse the social practices of flood management: the *riskscapes* concept.

Chapter 5 presents the methodology designed for this study. It starts with a consideration of positionality, ethics and questions of ownership which are presented as highly relevant aspects in empirical research. Building up on principles of ethnographic research, the methodology incorporates qualitative methods of social enquiry, especially those developed in social anthropology and human geography. Moreover, a range of visual and audio-visual methods are presented as part of the methodological design. Finally, this chapter gives a short overview on the different methods used for the analysis of data and information and the processes of interpretation.

Chapter 6 is the first of four results chapters which highlight different aspects among the social practices identified in the analysis of the empirical material. This chapter presents an overview and in-depth insight into the *social practices of living with the flood* in the case study villages. This involves practices directly and visibly contributing to flood management in the case study village as well as those social practices that indirectly relate to them, e.g. practices of retelling history, practices of fighting for land or practices of reproducing collective identity.

Chapter 7 presents an identification and analysis of additional social practices through the use of visual empirical material and analysis with the documentary method. Moreover, the chapter links the identified practices with some of the social practices identified in the foregoing chapter. Thereby a comprehensive analysis of the *social practices of anticipation* is presented, amended by additional insight into the materiality of flood management in the case study region.

Chapter 8 opens a different perspective into the social practices of flood management as here a large range of social practices of other actors is presented and analysed. Those practices performed at different geographic scales are selected that show repercussions in the local practice patterns of the case study region. Here, insight is won into the different discourses, interests, and risk perspectives that transpire through the social practices identified.

Chapter 9 consolidates the empirical analysis presented in chapters 6, 7 and 8 through the (re)formation of relevant practice patterns. This is accomplished through the conceptual approach of *riskscapes* which redirects the focus from the actors towards practices and the interrelations between practices. Different types of interrelations are identified and visualised with the *riskscapes* approach. This leads to a presentation of critical points of practice interrelations, where dominant practices are identified to stand in contrast and partly rule out other practices, (re)producing inequalities and creating new risks. As a result of this overview, selected

points are described where relevant dynamics of social transformation are recognised.

Chapter 10 draws together the lines of this thesis in a conclusion. After the formulation of final statements concerning the results of this thesis, the chapter presents an outlook on future research in the fields of social practice theory and riskscapes also involving questions of methodology, empirical field research and epistemological perspectives. This is complemented by selected recommendations for practical work and strategic orientation in disaster risk management that addresses amongst others the specific use of social practice perspectives.

2 TOPIC AND RESEARCH QUESTION

Yearly flooding and flood risk in a region of vested interest in territorial property and user rights; this can be described as the first and outer layer of a multifaceted situation along the Lower Usumacinta River and its adjacent strips of land. The processes described involve the inhabitants of many small and widely dispersed villages as well as a range of other actors, e.g. from government, the economic, humanitarian, and NGO sectors that interact with the people, the river and the land. Consequently, a situation is addressed – in a topical as well as topographical sense – which is of interest due to its relevance for science and society alike.

Within the interest of this investigation in social geography, a range of topics have been identified in the study area as highly relevant. These range from the topics of disasters and risks linked to processes of flooding, to concepts of nature and culture discussed in social anthropology, as well as processes that involve large infrastructural projects in different world regions. The specific interest in these topics is evoked because analysis of the relevant scientific literature and other documents shows that they have not been analysed profoundly in this constellation and for this world region with its specific social, ecological and political context. On the one hand the topics presented in more detail below are relevant in the sense of the necessity to gain more scientific insight through advancements of theoretical and methodological approaches. On the other hand, they are regarded by the author of this study as relevant in a social and socio-political sense. Several of the topics addressed here directly or indirectly touch aspects of basic human rights. As described in the introduction, the aim of this study is to analyse socio-spatial dynamics of flood and risk management in Chiapas. This is exemplified by empirical cases located along the river Usumacinta in the municipalities of Catazajá and Palenque. Figure 1 presents the location of the case study region in the larger topographic context of Mexico, highlighting the state of Chiapas, as well as the two other states (Campeche and Tabasco) whose water bodies form part of the hydrologic network of the Usumacinta River. In figure 2 (see colour plate p. 136) the two municipalities of Chiapas where empirical research was carried out are put into focus, displaying the location of the municipal capitals, Palenque and Playas de Catazajá, and the location of the case study villages. Alongside the development of new links between theories and the identification of relevant patterns of social dynamics it is crucial to point towards those dynamics and patterns that are involved in the creation of social vulnerability relevant in the everyday lives of people. This includes general and structural processes of economic and political marginalisation but also specific derogatory action as for example the deprivation of land property and of basic human rights.

In the following section, the main research problem is defined. Following this, the major topics identified in the research problem are described, including an overview on the state of the art in research and current challenges in the disciplines. This serves as an entry point into a specific situation in the field study region, which will be further developed and conceptualised throughout this study. The definition of the research problem and problem context as well as available knowledge and challenges leads towards the development of a research question, which is presented below (chapter 2.4). The broad topics touched here are linked with specific theoretical concepts which are specified further in the theoretical outline of this study (chapter 4).

Figure 1: River Usumacinta in the Mexican states of Chiapas, Campeche and Tabasco
Source: author´s elaboration using ArcGIS (version 10.1/2012) (edited by Johannsen)

2.1 PHENOMENA AND PROCESSES OF INTEREST

In the focus of this research are social actors in Southern Mexico, that face two different types of challenges: People in villages along the river Usumacinta and the adjacent water bodies (lagoons and small streams) live in a region where yearly floods are common in the months of June to October, which is the main rainy season in this climatic region (Reyes Barrón 2012; Fernández Eguiarte et al. 2012; CONAGUA 2014). In recent times however, extreme rainfall events have manifested a significant increase in frequency and severity which are linked to the effects of climate change (Arreguín Cortés et al. 2011: 22). In Mexico, severe droughts as well as storms and extreme precipitation events can be linked to the phenomenon of ENSO (El Niño Southern Oscillation) as well as more generally to global processes