



Where Does Ecotheology Speak? Religious Idiom, Household Authority, and Climate-Risk Communication among Coastal Fishers in Madura

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Abstract. Climate-risk communication is often assessed by how effectively official forecasts reach fishing communities. This article shifts attention to the communicative arrangements through which fishers make forecasts actionable and asks where ecotheology enters that process. Drawing on eleven semi-structured interviews with fishers, boat owners, a village official who also fishes, and women in fishing households in Dharma Camplong and Tambaan, Sampang Regency, Madura, the study uses an interpretive approach informed by ethnography of communication (EoC). Participants were recruited through purposive and snowball sampling, while Luhmann's concepts of ecological communication and risk–danger attribution guide the analysis of communicative pathways, authority, translation, and accounts of loss. The findings show a distributed warning system. Fishers primarily access BMKG weather applications through their mobile phones, then recalibrate it through peer calls, an informal WhatsApp group, local radio communication (ORARI), and the observation of clouds, wind direction, waves, and fishing grounds. The Madurese terms about wind direction such as *gendhing*, *selabung*, *pheret*, and *dhejeh* do more than preserve local knowledge. They translate uncertainty into practical thresholds for decisions at sea. Women extend this system from the shore by circulating alerts, questioning risky departures, and coordinating with neighbors. Religious idiom complements rather than replaces these forms of judgment. It provides an ethical grammar of *ikhthiar* that combines prayer, humility before the sea, and the imperative not to force departure when danger is already recognized. The study therefore locates ecotheology not in forecasting itself, but in the communicative ethics through which experiential judgment, household authority, and precaution are brought together in decisions about going to sea.

Keywords: climate-risk communication; ecotheology; local ecological knowledge; fishers; Madura.

1 Introduction

Climate-risk communication in coastal Indonesia is commonly approached as a delivery problem: official information must be produced, transmitted, and made available to people whose livelihoods depend on the sea. That work is indispensable, but it is analytically incomplete. A forecast does not become a decision merely because it is received. It must be judged against a moving sea, a boat's capacity, the cost of a cancelled trip, the advice of companions, and the concerns of people waiting on shore. The relevant question is therefore not only whether information travels, but how it acquires practical force.

This distinction matters acutely for small-scale fishers. Their work is both environmentally exposed and temporally compressed: a warning received a few hours before departure may alter where a boat is moored, when it leaves, whether nets are set, or whether the household accepts a day without income. Research on climate communication has long warned against treating audiences as passive recipients of messages [1–5]. Studies of coastal adaptation likewise show that local ecological knowledge and scientific forecasts are not simply competing systems; they are combined, tested, and sometimes found insufficient in relation to lived conditions [6–10].

A further body of scholarship asks how religion shapes environmental concern. Existing work has demonstrated that Islamic environmental ethics, religious organizations, and faith-based initiatives can animate pro-environmental commitments [11–14]. Yet much of this research examines formal organizations, educational initiatives, or environmental advocacy. It tells us less about the location of religious language in ordinary, high-stakes decisions: when a fisher is deciding whether to leave shore, who speaks with authority, and what does religious idiom actually enable? The difference is consequential. A normative ecology articulated in a sermon is not identical to the religious language available within an uncertain decision at sea.

The present study addresses that gap through an interpretive case in the coastal communities of Dharma Camplong and Tambaan, Sampang Regency, Madura. The interviews describe rainfall and wind that no longer follow inherited seasonal expectations, but they do not produce a simple opposition between 'modern' forecasts and 'traditional' knowledge. Fishers check BMKG information through smartphones; peers relay alerts by WhatsApp, telephone, and radio; visible clouds and named winds qualify the forecast; and households may stop a departure even after provisions are prepared. Within this arrangement, prayer and advice from elders or religious figures appear as resources for prudence, not as a substitute for observing weather.

The article is guided by two questions: (1) how does climate-risk information circulate and become actionable among coastal fishers in Camplong, Sampang Regency Madura? and (2) where, and with what practical effect, does religious idiom enter the sequence of risk assessment and decision-making? The article retains the phrase 'Where Does Ecotheology Speak?' because its point is analytical rather than celebratory. It locates ecotheology in communicative practice instead of presuming in advance that it governs adaptation.

The argument is that ecotheology speaks most clearly as an ethical grammar of *ikhtiar*—responsible effort before, during, and after a risky encounter with the sea. It operates alongside, rather than above, forecast information, peer communication, local ecological reading, and household negotiation. This position moves beyond two inadequate accounts: that religious language necessarily produces fatalism, or that it is irrelevant once digital forecasts are available.

2 Analytical Framework and Research Gap

2.1 Ecological Communication, Resonance, and Risk Attribution

Luhmann's ecological communication reframes environmental problems as problems of resonance. Society does not encounter environmental change directly; it responds when disturbance can be processed in communication through particular systems and their distinctions [15]. This does not deny material hazards. It directs analysis to the selective pathways through which an approaching storm becomes a warning, a decision, a household concern, or an administrative matter. In Indonesia, this perspective has been used to show how ecological and disaster issues can be diluted as they move through institutional communication [16]. At the shoreline, it helps identify why the same forecast is treated differently by a boat owner, an experienced crew member, a spouse, and a local official.

Luhmann's distinction between risk and danger sharpens this inquiry [17]. A possible loss is framed as risk when it is attributed to one's own decision, and as danger when it is attributed to external forces. The distinction is not a technical classification of a storm; it is a communicative attribution. In this study, a departure made despite a known wind threshold can be narrated as an avoidable risk, while an abrupt shift in weather after departure can be narrated as danger. Religious language may enter either account, but its practical meaning cannot be inferred from the word 'surrender' alone.

This approach complements, rather than replaces, research on social amplification of risk [18]. In Camplong, Sampang the important transformation is not only that a warning becomes louder or quieter as it moves between a phone, a group chat, and a conversation at the landing site. The forecast is translated into a question of whether gendhing is already rising, whether clouds have become dense and elongated, whether a small boat can ride the waves, and whether the household can absorb a missed day's income. Resonance is therefore situated and unequal.

2.2 From Ecotheology as Doctrine to Ecotheology in Practice

The literature on religion and environmental action offers two useful but insufficient starting points. One examines formal Islamic ethics and organised ecological initiatives [11–13]. The other observes that local and indigenous practices related to hazards may be intertwined with ritual, customary obligation, and religious belief [6]. Both are

valuable. Yet neither by itself explains the place of an utterance such as ‘do not challenge the sea’ within a household debate about a planned fishing trip.

We therefore use ecotheology in a practice-oriented sense. The concern is not to measure individual religiosity or to decide whether a belief is scientifically correct. It is to observe how religious language is used within communicative events: before departure, when an alert is relayed, in a spouse’s warning, during a storm, or after a boat returns. This follows practice-oriented work on lived religion, which treats religious meanings as enacted and distributed rather than merely held as abstract belief [14]. It also allows the data to complicate the common assumption that an appeal to God automatically removes human responsibility.

2.3 The Gap: What Existing Studies Leave Unresolved

Previous studies establish three propositions. First, climate information becomes usable only when it is credible, salient, and legitimate for its intended users [3–5]. Second, fishers’ ecological knowledge remains important under changing conditions, even where its predictive confidence is under pressure [7–10]. Third, religion can shape environmental attitudes and collective action [11–14]. The unresolved question lies at their intersection: how do scientific forecasts, peer networks, household authority, local environmental vocabularies, and religious idiom interact in the minute-to-minute work of deciding whether to go to sea?

This article’s contribution is deliberately narrower than a general theory of religion and adaptation. It reconstructs the communicative sequence through which a forecast becomes—or fails to become—an actionable warning in one coastal case. Its novelty lies in showing that ecotheology is not best located in a separate religious channel. Instead, it is embedded in the ethical calibration of decisions already informed by forecast data and local observation. Women’s roles are central to that finding: they are not merely dependents exposed to a fisher’s decision, but shore-based communicators who circulate warnings and exercise practical vetoes.

3 Methods

3.1 Design and Setting

This article is based on a larger qualitative study of climate risk communication in Camplong sub district, Sampang, Madura. Another analysis from the same fieldwork examines women’s roles and involvement in developing risk communication mechanisms in fishing activities and is reported separately due to its different object of analysis. No findings, quotations, or arguments are duplicated throughout this publication.

The study uses an interpretive qualitative design informed by the ethnography of communication [19, 20]. The design directs attention to communicative situations, events, participants, channels, norms, and consequences, rather than treating

information as a discrete input with a uniform effect. The broader case is the coastal fishing community of Camplong sub-district, Sampang Regency, Madura. Interviews were undertaken in Dharma Camplong and Tambaan, linked fishing settlements whose residents depend on small-scale capture fisheries and describe increasing difficulty in reading seasonal conditions.

The study is an intrinsic case, not a comparative survey. Its purpose is to trace the local organisation of climate-risk communication across linked positions: fishers, owners or skippers, a village official who also fishes, and women in fishing households. This position-based sampling makes it possible to follow an alert beyond the boat and into household deliberation.

3.2 Participants and Data Collection

Table 1. Interview records included in the analysis

Code	Communicative position	Location	Recode date	Main analytic contribution
F01	Village official and part-time fisher	Dharma Camplong	July 2026	Local wind terms, authority, institutional relay
H02	Fisher's spouse/landing-site worker	Coastal landing-site settlement	July 2026	Household warning and alert circulation
F03	Experienced fisher	Dharma Camplong	July 2026	Cloud reading, storm response
F04	Small-boat fisher/owner	Camplong	July 2026	Peer relay and boat protection
H05	Fisher's spouse	Camplong	July 2026	Neighbourhood deliberation and religious advice
F06	Fisher	Dharma Camplong	July 2026	BMKG use, <i>rumpon</i> as shelter
H07	Fisher's spouse	Dharma Camplong	July 2026	Warning relay and decision influence
F08	Senior crew fisher	Camplong	July 2026	Peer reports, sea ethics, prayer
F09	Line Fisher /owner	Tambaan	Sept 2025	Informal WhatsApp network and forecast translation
F10	Fisher	Tambaan	Sept 2025	Skipper authority, ORARI, timing
F11	Small-boat fisher/owner	Camplong	July 2026	Direct peer relay and precautionary prayer

Note: Codes replace names. "Interview records" is used because one participant was documented in more than one field record; the analysis does not treat this as independent corroboration

The corpus comprises eleven interview records collected during September 2025 until 2026. Semi-structured interviews were conducted in Indonesian and Madurese. The transcripts preserve the original language alongside Indonesian translations; English extracts in this article were translated for presentation and checked against the Indonesian rendering. The analysis also used field notes from the shoreline and mooring

area. It did not collect, export, or reproduce WhatsApp-group messages; references to the group are based on interview accounts and observation notes.

Interviews began with routine weather assessment and departure decisions before moving to questions about the circulation of warnings, household responses, prayer, advice from elders or religious figures, and experience of dangerous conditions. This sequencing helps distinguish religious idiom that appears in unprompted accounts of action from idiom elicited through reflection. It does not presume that absence from one part of an interview indicates absence from community life. Oral informed consent was obtained before each interview. Names and details that could unnecessarily identify individuals have been removed.

3.3 Analysis and Credibility

Analysis proceeded iteratively in four passes. First, interview records were mapped for pathways: who relayed what information, through which medium, and at what point before departure. Second, statements concerning authority and disagreement were compared across boat, household, peer, and institutional positions. Third, local wind and weather expressions were compiled as an operational glossary. Fourth, religious idiom was coded by its communicative location—anticipatory warning, departure ritual, in-event coping, retrospective attribution, or household instruction. Luhmann's concepts functioned as sensitising devices, not as a fixed coding frame.

Credibility was strengthened through position-based comparison, bilingual checking of key weather terms, a traceable link between claims and interview extracts, and attention to disagreement rather than artificial consensus. The study does not claim saturation or generalisability beyond the case. Its aim is a transparent, theoretically informed reconstruction of how risk communication works in this setting

4 Findings and Discussion

4.1 Warning Is a Distributed Arrangement, Not a Single Message

The interviews show that no single actor owns climate-risk communication in Camplong. BMKG forecasts are regularly consulted through smartphones, but formal local institutions are rarely described as proactive warning sources. Several fishers said that village authorities provide general appeals to be careful or that fisheries officials emphasise life jackets. Such messages matter, but they do not decide a departure. The operational warning system is distributed across phones, peer calls, an informal WhatsApp group, radio contact, and shoreline observation.

The group described by a Tambaan fisher as Komunitas Nelayan Pesisir has no formal chair or membership list. It is used for ordinary sociality as well as weather information. When a forecast signals a likely storm at a particular hour, fishers may leave earlier, return earlier, inspect mooring lines, or shift boats to safer points. A peer who is already offshore can also override an abstract forecast with a phone call reporting rising waves.

In locations beyond mobile coverage, radio contact remains an important safety channel. The arrangement resembles a locally maintained early-warning system, but it has no formal mandate, guaranteed coverage, or accountable operator.

This pattern does not indicate an information deficit. Most participants had access to forecast information. The central issue is calibration: whether the forecast corresponds to the present sea, the boat, the fishing method, and the time available to act. One senior crew fisher explained that a phone can indicate calm conditions while a companion already at sea reports a worsening wind. In his words, ‘for small fishers, the reality at sea is the primary law’ (F08, 22 July 2026). The formulation is not anti-scientific. It identifies the criterion by which a forecast earns practical authority.

4.2 Translating Forecasts through a Working Lexicon of Sea Conditions

Forecast information becomes actionable only after translation into terms that organise work. Participants distinguished *angin gendhing* (southerly wind), *selabung* or *timor* (easterly wind), *pheret* or *bharat* (westerly wind), and *dhejeh* or *daja* (northerly wind). These are not merely labels for compass directions. They carry expectations about wave form, speed of onset, fishing opportunity, and the safety of particular boats. An easterly wind, for example, was described as producing short, rapidly arriving waves; a strong southerly wind was repeatedly treated as a reason for small boats to remain ashore.

Cloud formations provide another translation layer. Fishers referred to dark, dense clouds, elongated high clouds over the south, and *La’pala’ taon*, a local designation associated with severe rotating wind. The same observation can lead to different decisions depending on whether the wind has already arrived, the type of gear used, and the trip’s distance. A skipper may decide to wait, a boat may anchor and remain in place, and crews may use a *rumpon* as temporary shelter. These actions are forms of practical risk management developed under conditions where forecasts are useful but not experienced as fully determinative.

The point is not to romanticise local knowledge as a complete substitute for meteorology. Participants explicitly noted that weather patterns are less predictable than before and that applications can be accurate. Nor is it to portray local terms as static remnants. Their role is operational: they make forecast information commensurable with a fisher’s own thresholds of danger. This supports research showing that climate services gain usability when they engage the categories through which users already interpret changing environments [4, 6–10].

4.3 Authority Is Plural: Skippers Decide, but Households Deliberate

The interviews challenge a boat-centred account of risk communication. On the boat, the skipper or *nakhoda* generally directs the immediate response; crew members follow a decision to wait, lower an anchor, retrieve gear, or return. Yet departure decisions begin before the boat reaches the water. Women in fishing households check weather information on phones, receive alerts from relatives or neighbours, and pass them to

husbands and other families. They are also able to contest a decision when visible conditions and forecast information indicate danger.

One spouse stated plainly that, if the application showed strong wind, she told her husband not to leave; he did not depart when she warned him (H07, 19 July 2026). Another described a woman calling one another when high waves were visible from the shore, then speaking with their husbands alongside the judgement of a senior fisherman. The outcome was not a private preference but a neighbourhood deliberation: provisions were put away and the boat was secured more firmly. These accounts show that warning circulation includes a shore-based relay and a household veto that risk-communication models focused only on the ‘fisher’ tend to miss.

Economic exposure makes this negotiation difficult rather than automatic. If fishing stops, households lose income, workers at the landing site lose fish to sort or sell, and some families turn to casual labour, savings, loans, or help from children. The decision to delay therefore cannot be reduced to obedience to a warning. It is a negotiation between the immediate cost of staying ashore and the potentially irreversible loss of a boat or a life.

4.4 **Where Ecotheology Speaks: Between *ikhtiar* and greetings to the guardian of the sea**

The enlarged corpus revises the preliminary interpretation that religious idiom appeared mainly after danger had occurred. It does appear retrospectively: a fishers who had nearly capsized described surrendering his fate to God while also calling a possible wreck ‘the risk of working at sea’ (F09, 20 August 2025). Read superficially, this may look like fatalism. Yet it coexists with accounts of checking forecasts, carrying equipment, seeking shelter, slowing engines, communicating by radio, and delaying departures. Surrender is not used to deny practical responsibility; it names the residual uncertainty that remains after action.

More importantly, religious idiom also enters prospectively as a language of restraint. A senior crew fisher recalled an elder’s saying that ‘the sea has an owner’; its practical implication was that people should not be arrogant, should read the signs of danger, and should not force a trip merely because they are tempted by income (F08, 22 July 2026). Before leaving, participants mentioned some Islamic dua *Bismillah*, *shalawat*, and *Al-Fatihah*, or a prayer for safety and sustenance. Wives similarly recalled messages from elders and religious teachers that sustenance is already arranged and that safety must come first. These utterances do not issue a forecast. They define the moral orientation within which a forecast and an observed danger should be acted upon.

This is the location at which ecotheology speaks in the case: not as an alternative authority that overrules experiential or meteorological knowledge, but as an ethical grammar that connects knowledge to restraint. The key idiom is *ikhtiar*. It requires effort—checking, preparing, listening, warning, and deciding—while refusing the illusion that technical calculation abolishes uncertainty. In this respect, religious language is compatible with the risk attribution that a decision to sail remains a human

decision. It becomes dangerous only if it is detached from ikhtiar and used to normalise avoidable exposure; the material here provides stronger evidence for the former use.

There is no uniform hierarchy of trust. Some participants said that they would follow the judgement of senior fishers or a kiai when messages conflicted, especially when the advice favoured caution. Others insisted that experienced fishers make their own assessment and that a village official cannot know the sea better than those who work on it. The relevant finding is therefore not that religious authority replaces local knowledge. It is that religious idiom is most persuasive when it reinforces a shared prudential conclusion: do not challenge the sea once danger is recognised.

4.5 A Situated Calibration Model for Climate-Risk Communication

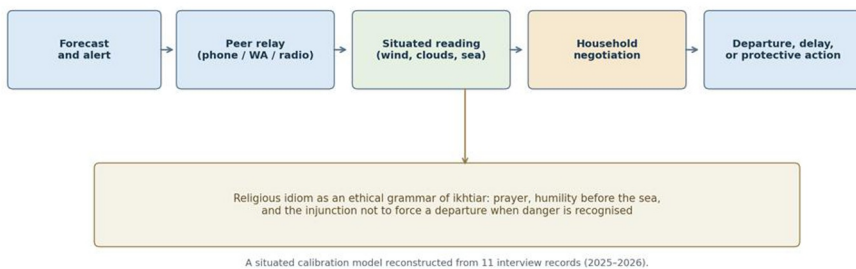


Fig. 1. *Situating calibration of climate-risk information in the Camplong case.*

Figure 1 summarises the argument. The model does not prescribe a linear sequence in which official information simply flows downward. Forecasts and alerts initiate one pathway, but practical action follows only through peer relay, local ecological reading, household negotiation, and a decision about departure or protective action. Religious idiom spans this pathway as an ethical grammar of ikhtiar, supporting precaution without replacing the judgement generated at each point.

The model offers a practical implication for climate-risk communication. Institutions should not assume that the solution is to add more messages to the same channel. A useful warning should be designed for relay: short enough for voice notes and peer calls, compatible with local wind and wave vocabularies, and timed for the actual window in which boats prepare to leave. It should also recognise households, particularly women, as legitimate communication actors. Engagement with religious figures is most appropriate when it strengthens a public ethic of precaution and does not turn them into unaccountable meteorological authorities.

5 CONCLUSION

This study examined how climate-risk information becomes actionable among coastal fishers in Camplong and where ecotheology enters that process. The evidence shows a

distributed warning arrangement in which phone-based BMKG forecasts are made meaningful through peer networks, local environmental vocabularies, boat-based judgement, and household deliberation. The practical unit of adaptation is not an isolated recipient of information; it is a linked communication system extending from the forecast to the shoreline, boat, and home.

The central contribution is to locate ecotheology in that system. Religious idiom does not operate as a rival forecast system, nor does it appear only as a retrospective language of surrender. It functions as an ethical grammar of *ikhthiar*: a call to pray, respect the sea, recognise limits, and avoid forcing a departure once danger is evident. This interpretation resists both the romanticisation of religious belief and the assumption that it necessarily undermines preparedness. In this case, religious language is most consequential when it helps align precaution with an already situated reading of risk.

The study remains bounded. It reports one coastal case and relies on interview accounts rather than a longitudinal archive of alerts or boat movements. The interaction between formal forecasting agencies, religious figures, and fishers should be examined further through observation of actual warning events. Even so, the findings indicate that climate-risk communication for coastal communities will be more credible when it works with the communicative arrangements already used to turn uncertainty into action—without reducing local knowledge, household authority, or lived religion to background culture.

Acknowledgments. This research was funded by the Non-APBN Fund of Universitas Negeri Malang through the Faculty of Social Sciences Decentralised National Research Grant Scheme fiscal year 2026. The authors gratefully acknowledge the fishers and household members in Camplong district, Sampang, Madura who shared their time and experience, as well as the student field research assistants who supported interviewing, transcription, and translation. Their contributions made it possible to document the everyday circulation and interpretation of climate-risk information in this coastal setting.

Disclosure of Interests. The authors have no competing interests to declare that are relevant to the content of this article.

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