library(ncdf4)

nc\_path <- "/Users/gaellemuller-greven/Dropbox/data\_science/projects/nasa\_space\_apps\_2025/nc\_files/GLDAS"

nc\_files <- list.files(path = nc\_path, pattern = ".nc4", all.files = TRUE, full.name = TRUE)

nc\_data\_file <- nc\_open(nc\_files[1])

var\_name\_list <- names(nc\_data\_file$var)

print(head(var\_name\_list))

nc\_data\_combined <- data.frame(matrix(ncol = length(var\_name\_list), nrow = 0))

colnames(nc\_data\_combined) <- var\_name\_list

nc\_close(nc\_data\_file)

get\_nc\_data <- function(nc\_file) {

print(paste("Extracting data from nc4 file: ", nc\_file))

nc\_data <- nc\_open(nc\_file)

var\_names <- names(nc\_data$var)

var\_values <- list()

for (v in var\_names) {

var\_data <- ncvar\_get(nc\_data, v)

if (dim(var\_data)[1] == 360 && dim(var\_data)[2] == 150) {

if (!is.na(var\_data[80,106])) {

var\_values = append(var\_values, var\_data[80,106])

}

else {

var\_values = append(var\_values, mean(var\_data[78:82,104:108], na.rm = TRUE))

}

}

else {

var\_values = append(var\_data[1], var\_values)

}

}

nc\_close(nc\_data)

return(var\_values)

}

for (nc\_file in nc\_files){

var\_value <- get\_nc\_data(nc\_file)

print(paste("Inside For-Loop: ", nc\_file))

var\_value\_df <- as.data.frame(var\_value, stringsAsFactors = FALSE)

names(var\_value\_df) <- var\_name\_list

nc\_data\_combined <- rbind(nc\_data\_combined, var\_value\_df)

}

nc\_data\_combined <- nc\_data\_combined %>% mutate(datetime = (as.POSIXct("2000-01-01 03:00:00", tz = "UTC") + time\_bnds \* 60), date = as.Date(datetime), time = format(datetime, format = "%H:%M:%S"))

write.csv(nc\_data\_combined, "/Users/gaellemuller-greven/Dropbox/data\_science/projects/nasa\_space\_apps\_2025/nc\_files/GLDAS\_CLSM10\_3H\_2010\_2014\_combined\_mandan\_nd.csv", row.names = FALSE)